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OUTLOOK '87

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PROCEEDINGS



Dec. 2-4, 1986 • U.S. Department of Agriculture
Washington, D.C.

ANNUAL AGRICULTURAL OUTLOOK CONFERENCE

United States Department of Agriculture
Washington, D.C.



PREFACE

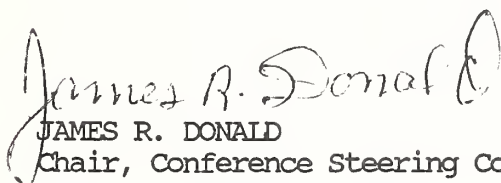
These pages contain the proceedings of the U.S. Department of Agriculture's 63rd annual agricultural outlook conference. Included are all papers submitted by those participating in the program. As noted in the Contents, no papers were presented during several follow-up sessions where discussion continued between speakers and the audience.

Outlook '87 took place at USDA headquarters in Washington, D.C. on December 2-4, 1986, with about 1,000 people in attendance. With the addition of a fourth meeting room, there were more sessions and speakers at this year's conference. Speakers from agribusiness, agricultural organizations and foreign governments were well represented.

In addition to the traditional coverage of the outlook for the farm economy and major commodities, rural Americans and food and nutrition, conference speakers discussed longer term prospects for U.S. agriculture, domestic and international marketing issues, trade policy and export programs, and future horizons in agricultural research.

Those who receive a copy of this publication will be sent preliminary information prior to next year's conference, Outlook '88.

For further information, contact Raymond Bridge at (202) 447-5447.


JAMES R. DONALD
Chair, Conference Steering Committee

World Agricultural Outlook Board
Room 5143 South Building, USDA
Washington, D.C. 20250-3800

February 1987

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PROGRAM AT A GLANCE

Dec. 2-4, 1986

Jefferson Auditorium

TUESDAY, DEC. 2

7:30 - 4:00

Registration: (Administration Building Patio)

900-LINE SERVICE: All speeches in Jefferson Auditorium can be accessed live by dialing (900) 410-JEFF. The cost is 50 cents for the first minute and 35 cents for each additional minute. Please determine in advance that long distance calls can be made from your telephone.

10:00 - 10:20

(1) Welcome

10:20 - 12:00

(2) Economic, Agricultural and Trade Outlook

12:00 - 1:30

Lunch

1:30 - 2:30

(3) Global Trends in Agricultural Supply and Demand

2:45 - 3:45

(4) Implications for U.S. Farmers, Public Policy and Agribusiness

4:00 - 5:00

(5) Panel: Where is U.S. Agriculture Headed?

5:15 - 7:30

Reception in Administration Building Patio



**Jefferson
Auditorium**

**Room 107
Admin. Building**

**Room 3109
South Building**

**Auditorium,
FAA Building**

WEDNESDAY, DEC. 3

7:30 - 4:00 **Registration: (Administration Building Patio)**

8:15 (6) Wheat Outlook

(12) Cotton Outlook

(18) Tobacco Outlook

8:00 (24) Rural Economy in Change

9:30 (7) Feed Grain Outlook

(13) Fruit/Vegetables Outlook

(19) Cotton Followup

10:15 (25) Nutrition Monitoring

10:45 (8) Oilseeds Outlook

(14) Conservation Programs

(20) Fruit/Vegetables Followup

11:45 Secretary Lyng's Remarks

12:00 Lunch

1:15 (9) Sweeteners Outlook

(15) Grain Followup

(21) Forest Products

12:30 (26) Family Economics

2:30 (10) Dairy Outlook

(16) Oilseeds Followup

(22) Rice Outlook

2:45 (27) Agribusiness Trends

3:45 (11) Cattle, Hog, Poultry Outlook

(17) Sweeteners Followup

(23) Food Price Outlook

and Marketing Issues

THURSDAY, DEC. 4

8:00 - 11:00 **Registration: (Administration Building Patio)**

8:30 (28) Farm Income and Finance

8:30- (31) Trade Issues and

(32) Livestock Followup

8:30- (35) Agricultural Research

9:45 (29) Farm Credit Outlook

10:45 Export Programs

(33) Dairy Followup

10:45 Thrusts

11:00 (30) Panel: Financial Stress

(34) Weather Service Outlook

ANNUAL AGRICULTURAL OUTLOOK CONFERENCE

United States Department of Agriculture
Washington, D.C.



Outlook '87, Session 1

Tuesday, December 1, 1986

WELCOME TO OUTLOOK '87

Peter C. Myers
Deputy Secretary of Agriculture

Ewen, thank you for that really fine introduction. It really is a pleasure for me to welcome you to this 63rd Annual Outlook Conference. I know that many good friends are in the audience today.

The first outlook conference, Ewen, was held well before you and I were born, and I know you don't have any grey hairs either. The main purpose then was to disseminate economic and research findings to American farmers, and the main purpose today is the same. Of course, we really appreciate all of you that do an excellent job in disseminating the findings that we will present in the next few days.

I know that we have all of our good friends from the Embassies here today. It's understandable that other nations are concerned about our agricultural policy, and we really welcome all of you.

Looking back to 1923, times have changed and so has farming. In my own lifetime, in fact, I have seen some tremendous changes. But one thing that hasn't changed is the need of the American farmer for accurate, timely analysis of the short-range and the longer term prospects that influence supply and demand factors. Looking at this program today and for the next few days and seeing the excellent speakers, I think we are going to have a very good cross section of viewpoints on the outlook for both the short term and the long term.

I do plan to keep my comments brief this morning because it is certainly not necessary to dwell upon the importance of agriculture. Being a farmer myself, I am a bit prejudiced when it comes to this subject. I won't give you a lengthy discourse on the importance of agriculture to the U.S. economy, but as our first President once said with reference either to individual or national welfare agriculture is of primary importance. These words, which are carved in the stone over the entrance to this Department, are as valid today as they were when George Washington first said them. In recognition of that importance, this year's conference has been expanded to include more commodity sessions, as well as more time for participants to follow-up informally with conference speakers. I know I personally find that I learn the most when I get to talk one on one with somebody that has an issue or viewpoint that I am really interested in.

In addition to expansion of commodity sessions, speakers have been asked to focus on two themes: (1) the longer term prospects for U.S. agriculture in the late 1980's, and (2) the strategies for marketing farm commodities more effectively. It is especially important that we look at marketing as our farmers work to increase their net profits. Anytime a farmer can market more intelligently that's going to be net profit. The first theme will be highlighted at a special session this afternoon featuring a number of experts who probe the global forces shaping agriculture for the balance of this decade. The second theme recognizes that marketing strategies are rapidly becoming as important as production efficiencies. Hence commodity sessions and special sessions on agribusiness and export programs will sharpen the focus on marketing issues.

The conference comes at a critical time in agriculture. The momentum is building for renewed debate on farm policies in the Congress next year. This debate is going to surface with many different players, some of whom may not be quite as familiar to us. I think we are going to see urban Congressmen get involved in this debate. The level of rhetoric might even set an all-time record. Certainly, the analysis covered at this conference could play a key role in helping everyone better understand the forces that are at work today. We can not and, I repeat, we will not promise to solve all the dilemmas. We won't even guarantee to answer all your questions, but we will try. However, whether you are a newcomer to the Outlook Conference or a seasoned veteran, I feel that we will succeed if your imagination is stimulated and your intellect challenged.

ANNUAL AGRICULTURAL OUTLOOK CONFERENCE

United States Department of Agriculture
Washington, D.C.



Outlook '87, Session 2

Tuesday, December 2, 1986

OUTLOOK FOR THE U.S. ECONOMY

Rudolph G. Penner
Director, Congressional Budget Office

These are trying times for economists. Indeed all times are trying for economists. Once, when Paul Samuelson was asked how far into the future economists could forecast, he said minus one month. That is to say, if we only knew what happened last month we would be ahead of the game. Even that statement is optimistic, I think, because we can't really forecast the past anymore. Our various statistical agencies keep revising past history so just when we think we understand the numbers, they change them.

CBO's last official forecast was done in August. In other words, we don't follow the first rule of forecasting which is forecast often. But things haven't changed a great deal since that time. Then and now we faced the same major uncertainties in the economy.

At the top of the list for the short run I put the effects of tax reform. There is a general consensus in the economics profession that tax reform is going to be good for the economy in the long run. While capital will be taxed more heavily and therefore we would expect to have less of it in the long run, it will be taxed more equally. I think there is a general consensus that we will get a big rise in productivity from using what capital stock we have more efficiently.

The short-run effects of tax reform are hard to predict. It is so complex that it affects almost each individual and firm in the economy differently. As Mark Twain once said, almost all generalizations turn out to be wrong. We don't know exactly how tax reform will affect the end of this year and the beginning of next year. Those that get an advantage at the end of this year may try to move their activities forward, and those that have an advantage at the beginning of next year may try to move their activities back. This could cause some disruption, although we don't think that it will be major.

The second uncertainty is the trade balance. Economic theory and common sense tell you that with the economies of our foreign trading partners growing, although not vigorously, and with the exchange rate having changed as much as it has over the last number of months, the trade balance should be turning around. Indeed in our August forecast, we did have a major turnaround for 1987. It has been slower in coming than we anticipated, but there do seem to be signs now that at least the situation has stopped deteriorating. The last couple of months look pretty good on a seasonally adjusted basis. Whether 1987 turns out to be good, bad or indifferent really hinges on the extent of the trade turnaround.

The third major change is in government policy. Partly because of the Gramm-Rudman-Hollings law we expect a huge reduction in the Federal deficit this year. Our own estimate has it going from \$221 billion in fiscal 1986 to something like \$151 billion in fiscal 87. Now the old-fashioned view of such a turnaround was that while deficit reduction is good in the long run for economic growth, in the short run it can be quite contractionary. Our own view is that theory has to be modified in the current economic situation.

The degree to which our economy has to be viewed as part of the world economy has altered radically in recent decades. In our view, our policies now have an immediate impact on international trade and the international capital market. In the case of changes in fiscal policy, we believe that there is a very close relationship between the size of the Federal deficit and the size of our trade balance. Indeed you might even call them Siamese twins. We see the nexus working this way: As we reduce our Federal deficit, we take some pressure off interest rates in our capital markets. This makes the United States somewhat less attractive to international capitalists as a place in which to invest. That should weaken the dollar and make our markets more competitive. In other words, we see the contractionary effect of deficit reduction as being offset to a considerable degree by an improvement in the trade deficit.

Now indeed if things worked perfectly, economic theories suggest that the offset should be dollar for dollar. That is to say, if we had perfectly fluctuating exchange rates and perfect international capital markets, fiscal policy should be impotent in the American economy. Now we don't believe that things work quite that well, and some of the major uncertainties in this nexus that I have described are the time lines and whether the trade balance and the budget can get out of phase. But, the bottom line is that one of the reasons we anticipate improvement in the trade deficit is our optimism about the budget deficit.

We think that capital markets have become much more efficient in recent years. Capital markets move so quickly that some of the long-run benefits of deficit reduction are brought forward rapidly, especially in today's environment where the budget deficit problem has caused so much anxiety. We think the beneficial psychological effects of showing that the situation is turning around should be salutary to the economy.

The last reason that we don't have a big contractionary effect from this huge deficit reduction that I talked about is unfortunate. The reason is that much of that change from \$221 billion to \$151 billion is illusory, because it is dependent on a lot of very temporary factors that the Congress took advantage of to get under the Gramm-Rudman target, one of those being a temporary bulge in tax revenues of \$11 billion resulting from the tax law. Because it is so temporary, we wouldn't expect that to have a big economic effect.

We engaged in slight of hand with regard to the timing of expenditures. We moved some expenditures such as general revenue sharing from 1987 to 1986. We moved the military pay day from the last day of fiscal year 1987 to the first day of fiscal year 1986 to reduce the '87 deficit and did a number of things of that type worth about \$4 billion altogether. I suspect, by the way, as we confront the 1988 budget problem we may do things like move the military payday back again, saving over \$2 billion in each of two years by doing so. Add to this list about \$7 billion in asset sales that really don't have a very different effect on the economy from selling Treasury bonds. When you add it all up, the \$151 billion estimate we are making for the deficit in 1987 is a significant understatement of the true underlying deficit problem. Adding back those items that I mentioned, you would have a deficit in the \$170's. That's a big improvement over the year before, but not as much improvement as the accounting numbers will show.

The last uncertainty that people worry a lot about but apparently don't get very excited about is the debt situation--the LCD debt, the oil-related debt, the farm-related debt, the huge debts that our consumers have taken on. While the numbers are spectacular, I think that we have been handling that situation with enormous skill. It's our bank regulators and the the Federal Reserve System that have to take a lot of the credit. We have been muddling through skillfully, and I would expect us to continue to muddle through. I list debt as an uncertainty because most forecasters do.

Adding all of this up, we get a semi-optimistic view of 1987. For the rest of 1986, we see the economy growing a little over 3 percent. The first report on the third quarter was 2.9 percent. In 1987 we see growth during the year of about 3 1/2 percent, which is a little bit more optimistic than the consensus as reflected by the blue-chip forecasters, whose average is about 2.9 percent. As forecasting goes, that is not a real difference. Our average forecast error (and I pat ourselves on the back and say we are one of the best) is about 1 percentage point, so the difference between forecasts is not statistically significant. On the bad news side, we do have inflation accelerating a little. This year, during the year, it averaged a remarkably low 1.2 percent. Next year we have that rising to 4 percent. We don't see that really as a fundamental change in the deflationary trend that we have experienced over the last number of years. Rather that acceleration reflects the disappearance of some temporary factors. We expect the benefits of the oil price fall to be gone by then. The exchange rate fall by itself is inflationary but not in a lasting way. Because we are optimistic about real growth and because we have inflation going up again, logic demands that we have to have interest rates going up some. We have the 90-day Treasury bill rate averaging a little over 6 percent next year as compared to recent rates of about 5.4 percent. Unfortunately, none of this adds up to a very significant fall in the unemployment rate. We have about a 6.7-percent average next year.

What are the major risks to this forecast? There is a very small band of forecasters that think we might have a recession next year. I find it very hard to put together a recession scenario, but you can never rule it out. I would think that the odds are very low--probably about 1 in 20. One thing that we have going for us next year that really I think puts a cushion under economic activity is that inventories are in extraordinarily good shape. Even if all business wants to do is maintain recent inventory/sales ratios, that implies a very large increase in inventory investment for next year.

On the other side of the coin, our forecast may prove too pessimistic. You don't hear much talk about a possible boom; most forecasters seem to have ruled out any possibility of a real boom. However, there is a possibility out there. I think the probability is low but there is a possibility of a great variety of things coming together. There are sets of assumptions that one can make that make tax reform actually quite expansionary next year. I would not make those assumptions, but they are not totally unreasonable. If you had that effect plus trade suddenly turning around more vigorously than we expect in response to the exchange rate change, you could have really quite a significant boom. Would such a boom turn into inflation? Again, I think that the underlying trend with regard to inflation is clearly down. The wage settlements and nonunion area of the economy have been behaving extraordinarily well. I find it hard to see a real acceleration of inflation without some turnaround there and without some bigger increase in commodity prices, but there are a few economists around who think that the wages will start to move when unemployment

gets around 6.8-6.7 percent, or in other words, about the levels we forecast with our modest growth next year. My own judgment is that this is unlikely to occur until the unemployment rate gets considerably lower, say into the low 6's, and you can even make an argument for the high 5's. But for the sake of our analysis we use about 6 percent as what the economists call the natural rate of unemployment, the rate below which wages would start to accelerate, and above which they should continue to be well behaved.

Looking at the whole picture, again I return to the dependence of the outlook on this very uncertain trade picture. That's where most of our optimism comes from, but trade is also the major reason our forecast is tenuous. Consumer expenditures are unlikely to increase as much as they did last year. We don't have much life in investment because we are worried about the disruption caused by tax reform. Of course, we don't get much life out of government because of the constraints imposed by Gramm-Rudman-Hollings. A very large share of our strength comes from the trade sector.

Let me just take my last couple of minutes to turn to the budget outlook. The CBO only forecasts the economy so we can estimate the budget. I mentioned in passing that the deficit situation had turned around and it certainly has from the kind of situation we were portraying a couple of years ago, where deficits were not only rising rapidly--perhaps towards the \$300 billion level by the end of this decade. They were rising much faster than our income. We were in a truly unstable situation where we were adding to the debt so fast that the interest bill on the debt was a major part of the budget problem and threatened to get completely out of control.

Now we are projecting declining deficits. The major change, by far the most important quantitatively, is in the defense sector, where earlier on the Congress had voted for growth in defense budget authority of over 5 percent per year in real terms through the mid-80's. The political pendulum has swung with a vengeance and in fact the defense program in terms of spending authority was cut in real terms in 1986 and cut further in '87 with the recently passed appropriation.

That turnaround does not mean that the problem is solved. I think this is a very important point to make: while some are satisfied with the news, we portray even a deficit in the \$150's or the \$170's as enormous compared to our past history and point out that our national debt will still be growing significantly faster than our income. And, there is always a chance of either the economy going bad or something changing. For example, an international crisis that made us increase defense again would very rapidly put us into the \$200 billion deficit range. In short, the current situation certainly is not satisfactory. It leaves no room for a variety of risks and is open to great uncertainty.

I suppose in this crowd I should mention that one of our greatest uncertainties, of course, is our agricultural payments, the one part of the budget that is totally out of control. We actually have those coming down a little bit next year. We are very nervous about that; so nervous we are looking for a good agricultural economist at CBO. We want someone who can tell us how to make both the farmer and the consumer better off while lowering the cost of subsidies and improving the agricultural trade balance. Actually, three out of four will do. With that advertisement, I will stop and take your questions.

ANNUAL AGRICULTURAL OUTLOOK CONFERENCE

United States Department of Agriculture
Washington, D.C.



Outlook '87 Session #2

For Release: Tuesday, December 2, 1986

WORLD AND U.S. AGRICULTURAL OUTLOOK

James R. Donald
Chairperson, World Agricultural Outlook Board
U.S. Department of Agriculture
Washington, D.C. 20250

Large global crop supplies are expected in the coming year, boosted by record output abroad and large 1986/87 U.S. carryin stocks. World crop use should benefit from economic growth and expanded livestock and poultry output. Even so, use will remain below the level of production, causing a further buildup in stocks.

In 1987, American farmers will benefit from higher income and consumers will continue to see modest increases in food prices. While U.S. crop prices will remain under pressure, farmers' income from crops will be supported by Government price support programs. With cattle and hog prices higher, livestock producers should earn more. Low inflation should help hold farm production expenses in check.

Food prices rose only about 3 percent in 1986. In 1987, retail food prices may increase only 2 to 4 percent, in line with a continuing low rate of inflation and relatively large commodity supplies.

Record crop harvests are expected abroad in 1986/87. This record harvest will about offset a smaller U.S. crop and keep global output around 1985/86's record level. U.S. output is down substantially because of producer participation in Government acreage-reduction programs and lower yields for some crops.

Global crop consumption should show a gain in the coming year, responding to population gains, economic growth and higher animal-product output. Even with this modest gain, consumption is not expected to reach the level of production; global carryover stocks will continue to grow. Stocks would still represent only 3 months of use.

Global trade is expected to expand moderately for grains and soybeans, with a sharp increase for cotton. The increase in global trade and lower U.S. prices point to a larger volume of U.S. agricultural exports.

Domestic demand for U.S. crops will benefit from higher livestock prices, but total feed consumption will slip. Total meat output will be a little lower and

the share of poultry in the production mix will increase further. Combined domestic and export demand for feed grains and soybeans will be below production, while greater use than output will bring down stocks of wheat, rice, and cotton.

Cash receipts from crops are likely to continue lagging in 1987, if prices and production remain at reduced levels as expected. Livestock receipts will be up as higher prices for cattle and hogs offset lower total meat production and reduced poultry prices. Gross farm income will be boosted by large Government payments, while net income will benefit from lower production expenses stemming from a continued low rate of inflation and, possibly, reduced acreage. Net cash income in 1987 may exceed the 1986 high of about \$44 billion by 5 to 10 percent. Net farm income also is projected to show a rise of perhaps one-tenth from the approximate \$29 billion in 1986.

Looking beyond 1987, the U.S. agricultural outlook over the next several years is for:

- o A slow expansion in U.S. agricultural exports, in response to global economic growth and competitive prices;
- o Farm income supported by Government programs, as provided in the Food Security Act of 1985; and
- o Exposure of the Government to large outlays under price support programs.

Global Setting

Projections call for continued large global crop supplies in 1986/87 and moderate demand expansion. Feed grain and soybean crops are projected to more than match use, pointing to a further buildup in stocks, while wheat, rice, and cotton stocks may be reduced from very high levels.

Global trade should expand, with increased consumption in several countries, larger crop shortfalls in a few importing countries, and some building of stocks in competitor countries.

Crop Production

Global crop output is projected to almost match the 1985/86 peak as record crops abroad offset smaller U.S. output. Reduced acreage and lower yields are causing smaller U.S. crops, while production abroad is likely to be boosted by a larger wheat crop in Canada, a bigger feed grain crop in China, and recovered soybean production in Brazil.

World feed grain production may show a moderate decline as larger production in Canada, China, and South Africa is more than offset by smaller crops in the United States and Western Europe. World wheat production may be up in 1986/87 as bigger crops in Canada, Argentina, the Soviet Union, and China more than offset smaller U.S. output.

World soybean production may increase if soybean yields recover in Brazil. More acreage could mean a slightly larger crop in Argentina, while lower U.S. acreage and yields have reduced U.S. output.

A smaller U.S. cotton crop will help to reduce global production in 1986/87. Production abroad also is expected to decline, with lower yields in the Soviet Union and reduced acreage in China.

Demand Factors

Global economic conditions in 1987 are likely to be at least modestly better than in 1986, partly because of lower oil prices. The outlook for a pickup in economic growth and slow rates of inflation is supportive of increased use of agricultural products. Large crop supplies and lower prices also will stimulate consumption.

Economic activity in developing countries will benefit from exports to industrialized countries. Economic growth has been lagging in the United States, but the growth should strengthen in 1987 as the U.S. economy responds to lower interest rates, the weaker dollar, and reduced oil prices. This should result in larger exports, smaller imports, expanded investment, and continued relatively strong consumer spending. Inflation is expected to remain at a dampened level with ample capacity for expanded demand.

World animal-product output is expected to increase slightly in 1987, with continued expansion in poultry production in a number of countries and larger pork production in a few, especially in China, Japan, and the EC. Global beef production will be dampened by smaller U.S. output. Lower feed prices and better returns to livestock producers should keep feeding rates at high levels.

The U.S. dollar has continued to weaken slightly in 1986, with lower interest rates and a sluggish economy. Dollar stabilization efforts of central banks of several countries and a pickup in economic growth may help support the dollar, but the large U.S. trade deficit could be somewhat offsetting. In any case, U.S. agricultural exports should benefit from earlier declines in the dollar in some markets. Also, U.S. agricultural exports stand to gain because of lower prices resulting from reduced loan levels, marketing loan programs for rice and cotton, and the Export Enhancement Program.

Commodity Outlook

The global commodity outlook is for continued large supplies and some strengthening in demand. Crop production likely will be up abroad, but U.S. exports should expand in response to lower U.S. prices which will increase competitiveness as well as stock building in some importing countries which will expand total imports.

Wheat

The global wheat outlook includes prospects for at least modest recovery in trade and an increase in the U.S. share of trade.

The outlook for U.S. wheat in 1986/87 is for further contraction in production, improvement in exports, and stocks slipping below the record carryin level.

A number of factors have depressed world wheat trade and U.S. exports in recent years, including growing competition abroad, rising output in nontraditional exporting countries, and rising debt and falling commodity prices in developing countries. Although the dollar has weakened in the past year, lowering prices to importers, it remains strong against currencies of many wheat importing countries and also some competitors. Soviet import needs, a major source of demand for U.S. wheat, dropped sharply last season, and the U.S. share of the Soviet wheat market fell to near zero because the Soviets switched to lower-priced sources. Soviet import needs are likely to slip further in 1986/87.

With high participation in acreage reduction programs since 1982, harvested wheat acreage has dropped from 81 million acres to 61 million acres and production has fallen from nearly 2.8 billion bushels to near 2.1 billion. Domestic wheat use has been bolstered by population growth and by a high level of wheat feeding following the 1983 drought. Exports, however, have dropped precipitously from a 1982/83 peak of 1.8 billion bushels to only 915 million bushels last season, and stocks rose to a record 1.9 billion bushels.

The institution of sharply reduced loan rates under the 1985 Farm Act will lead to adjustments in both grain producing and consuming countries. Farm wheat prices are likely to average around \$2.20 to \$2.40 cents per bushel this season, compared with \$3.16 last season. U.S. wheat exports should rise significantly in 1986/87, even with continuing large supplies abroad.

Over the next few years, reduced prices should constrain output growth abroad and may stimulate shifts in cropping patterns away from wheat in some countries. A major uncertainty is the reaction in the EC to large budget deficits from grain surpluses and subsidies. Also, the level of Soviet dependence on imported grains could diminish if both productivity and wheat quality improve. For the near future, however, continued Soviet dependence on imports is likely.

Rice

Global rice consumption could be a little larger than production in 1986/87, slightly reducing stocks, with trade levels dependent on needs in key countries. Competitive U.S. prices resulting from the marketing loan program should lead to much larger U.S. exports, up almost 40 percent in the 1986/87 marketing year. The U.S. share of global trade should be over one-fifth in calendar year 1987, up from 18 percent in 1986.

U.S. exports should rise moderately over the next several years. In the late 1980's, use may again exceed annual production levels, allowing stocks to drop to a reasonable level relative to use and prices to rise.

Feed Grains

World feed grain stocks are projected to further increase in 1986/87. Even though the smaller U.S. crop likely will help bring down global output, expanded demand will not match the level of production. Global trade should expand and U.S. exports should increase, with the U.S. share of global trade rising slightly.

Domestic feed grain use is likely to hold nearly steady, even though livestock inventories will be down, reflecting high rates of feed use, more poultry, and rising industrial use. Total feed grain use will still fall well short of the reduced 1986 crop, propelling ending stocks from about 125 million tons to nearly 170 million tons at the end of 1986/87.

The U.S. corn carryover is expected to exceed 5-1/2 billion bushels by September 1, well above beginning stocks and the 3.5-billion-bushel carryover in 1983. In recent years, demand for corn and feed grains has been severely weakened by lower exports. Even with the increase in 1986/87 corn exports, the projected level is over 40 percent below 1979/80. In addition to the U.S. markets' loss to competitors, the level of global trade has been reduced one-fourth from the 1980/81 peak by reduced feed demand and increasing competition from other feed grains and wheat.

Over the next few years, large debt in some developing countries, the trade-restricting policies of many countries, and large supplies of competitive grains may limit the expansion in world trade. Thus, large carryovers and low prices appear likely. Eventually, however, the reduced level of global prices should constrain expansion by competitors and stimulate use, strengthening the outlook for feed grain demand and prices. Major uncertainties in the U.S. export outlook include purchases by the USSR, China, and sales by the EC.

Oilseeds

Global soybean production in 1986/87 may again substantially exceed use, if Brazilian yields recover. World trade should increase slightly, but the U.S. share may slip because of expanded competitor supplies of soybeans and other oilseed crops.

Record world oilseed crops are forecast for 1986/87 despite a sharp drop in U.S. production. U.S. farmers are harvesting 6 percent fewer soybeans this season, with declines in both acreage and yield, partly resulting from drought in southern states. Peanut yields and production also were reduced by drought. A smaller cotton crop will reduce cottonseed supplies.

Oilseed production abroad may rise moderately. Soybeans will gain most as Latin American production recovers from the 1985/86 drought.

Large inventories of vegetable oil and slow growth in world meal production are expected to limit growth in world oilseed crush and trade in 1986/87. With supply gains in the EC, Eastern Europe, and several other importing countries, along with renewed competition from South American exporters, U.S. soybean exports may increase only modestly, while meal exports are likely to decline. U.S. soybean meal use could rise modestly as supplies of other meal feeds decline and poultry output grows, even though corn may be more competitive. The Soviet Union is expected to maintain a high level of protein imports and use. Meal use may expand over the next few years in order to improve feeding efficiency.

U.S. soybean oil exports could drop in the face of large supplies of competing oils, financial constraints in a number of traditional importing countries, and an increase in India's oilseed production after last season's drought. The Soviet Union, on the other hand, is expected to show a good rise in vegetable oil imports as dry weather has reduced prospective yields and production for the Soviet sunflowerseed crop. Mexico's imports also may rise under U.S. Government assistance programs. Also, it should be noted that the growth in Malaysian palm oil output has slowed sharply in recent months and a continuation of this slowdown could change the outlook for U.S. soybean oil exports and prices.

Domestic prices for oilseeds, meals and oils are expected to drop in 1986/87 and stocks will remain at very high levels. The U.S. soybean loan rate is \$4.77 per bushel, while the effective loan is \$4.56 because of Gramm-Rudman. The 1985 crop loan rate was \$5.02 per bushel. Even at these reduced levels, soybean prices would be relatively high in relation to grains, perhaps causing acreage shifts to soybeans in countries such as Argentina.

Livestock and Poultry

World animal-product output likely will increase modestly over the next 12 to 18 months, with continued growth in poultry production and larger pork output. In spite of prospects for lower beef output in 1987, total meat production in the United States may remain relatively large, as poultry output expands. U.S. livestock producers should see favorable returns as meat supplies tighten in the first half, demand strengthens, and feed costs remain at reduced levels.

After 5 years of decline, the January 1, 1986 U.S. cattle inventory was at the lowest level since 1963. The high levels of beef cow and heifer slaughter in 1986 indicate a further decline. For 1987, the smaller inventory and sharply lower dairy cow slaughter point to a continuing decline in beef production. With feed costs low, fed beef production may continue near this year's level while nonfed output declines. Choice steer prices are expected to strengthen further in late 1986, as red meat output declines, and continue strengthening next year.

Hog numbers have continued to decline this year. Breeding hog numbers on September 1 remained at a low level, following the lowest June 1 estimate since USDA established the June 1 inventory estimates in 1964. The low inventory coupled with farrowing intentions suggest there will be year-over-year declines in pork output through much of next year. Favorable returns to pork producers should stimulate a turnaround in pork production; but based on the September Hogs and Pigs report, it will be at least the fall of 1987 before output increases.

Hog prices are averaging well above year-earlier levels and likely will continue at increased levels in the first half of 1987. Prices by next summer may not match this year's levels, but they should still be at a relatively high level.

Strong demand is supporting increased poultry output at higher prices. Broiler and turkey producers both enjoy favorable returns. Broilers are benefiting from strong demand, partially because of the introduction of several new

chicken dishes to the menus of restaurants. Turkey is also benefiting from the introduction of several new products. Continued good returns are expected to result in production gains for broilers and turkeys in 1987.

Egg production is increasing in 1986 and another increase is likely for 1987. Lower feed costs and tightening red meat supplies will support returns in 1987.

Dairy

The Dairy Termination Program (DTP) is a part of the Food Security Act of 1985. Under this program, producers could bid to sell out their entire dairy herd and receive payments from the Government. Producers who had their bids accepted agreed to remain out of dairying for at least 5 years. This program is resulting in a reduction in milk production. However, the duration of this reduction is very much in question. The milk price support level has been reduced and another reduction is scheduled for the beginning of 1987. But, lower feed costs have and will largely offset these lower milk prices.

Many producers not participating in the DTP may expand their output. However, with the reduction in cow numbers that is resulting from the DTP, milk production in 1986/87 is expected to decline about 3 percent. Low feed costs will be conducive to high rates of concentrate feeding and output per cow will increase. However, the decline in cow numbers will more than offset the increase in output per cow. Commercial use is expected to continue to increase during 1986/87, but the rate of increase is likely to slow from the 1985/86 pace. This combination of reduced milk production and increased commercial use should result in much lower levels of Government purchases of dairy products in 1986/1987.

Cotton

Prospects for 1986/87 are for global cotton demand to moderately exceed production. Output is projected down nearly one-tenth from 1985/86, owing primarily to smaller crops in the United States, China, the Soviet Union, and India, while world use is projected to increase about 3 percent. World trade may rise by more than one-tenth.

With the 1986 cotton program encouraging smaller production and making U.S. prices competitive in domestic and export markets, U.S. stocks are projected to decline sharply this season. Output is down one-fourth, while total disappearance is expected to rebound to nearly 14 million bales. Ending stocks are projected at about 5-1/2 million bales, 3.8 million below the beginning level.

Longer term U.S. export prospects appear fairly bright. Continuation of competitive prices under the auspices of the Food Security Act of 1985 suggests that U.S. exports should be able to maintain the current market share of about 30 percent of world trade during the late 1980's. This compares with a projected 29-percent share for 1986/87 and a depressed 10-percent share in 1985/86 when U.S. prices were not competitive in international markets. U.S. exports over the next few years may remain at an increased level, partly depending on competition from China and Pakistan.

Global Trade

Combined global exports of wheat, feed grains, and soybeans are expected to be up about 4 percent in 1986/87, following a decline of 15 percent in 1985/86. The volume of U.S. exports is projected to increase around one-tenth and the U.S. global share may increase to around 43 percent, from 40 percent in 1985/86. The rise in global trade and more competitive prices will boost U.S. exports.

For fiscal year 1986, the value of U.S. agricultural exports fell around 15 percent to \$26.3 billion. The volume of exports should move higher in fiscal year 1987. Crop prices likely will be at lower levels, while animal product prices should be higher.

U.S. agricultural imports totaled about \$20.9 billion, up from fiscal year 1985 primarily because of larger coffee imports. The export trade balance fell to about \$5-1/2 billion.

Crop Stocks

Global crop stocks likely will be at record levels by the end of the 1986/87 marketing year. Projected feed grain stocks are over 220 million tons, up from estimated record carryin stocks of around 180 million. Projected stocks would represent about one-fourth of annual use. Wheat stocks also are projected at a record level and at one-fourth of annual use. Most stocks will be held in the United States, where stocks-to-use ratios will be much higher, at nearly 80 percent for corn and 85 percent for wheat.

World soybean stocks are projected at a new record, of 25 million tons, with record U.S. soybean stocks to represent more than one-fourth of use. Global cotton stocks likely will fall, with U.S. stocks representing about 40 percent of annual use.

U.S. Commodity Prices, Farm Income, and Food Prices

U.S. Commodity Prices

Large crop supplies will keep pressure on prices in coming months. For livestock, the 1987 outlook is for sharply lower beef output and lower pork output through the first half. Cattle and hog prices should average above 1986 levels, even with continuing increases in poultry product output. Crop prices likely will remain at reduced levels through mid-1987, with second-half prices depending on production and trade prospects for 1987 crops. In the absence of significant changes in U.S. Government programs and severe crop shortfalls in several other countries, prospects for continued large supplies likely will keep pressure on crop prices.

Farm Income

This commodity outlook suggests 1987 marketing receipts below 1986, as lower crop prices and output more than offset larger poultry output and higher livestock prices. However, crop receipts will be supplemented by record Government payments of some \$14 to \$16 billion, boosting gross cash income to around the \$150 billion of 1986.

Producers also will benefit from reduced prices for inputs, including fuel, fertilizer, and interest rates. Total cash expenses of \$101 to \$105 billion, down from \$106 billion in 1986, would leave farmers with net cash income exceeding last year's \$44 billion by 5 to 10 percent.

Estimated net farm income of \$29 to \$34 billion is above 1986's estimated \$29 billion. The value of inventories may be reduced \$2 or \$4 billion in 1987.

Food Prices

Food prices in the second half of 1986 have reflected tightening meat supplies and higher prices. Still, with the slow rate of inflation in the economy, marketing costs (the primary component of food prices) will be held in check. The expected 1986 increase in all food prices of around 3 percent is only slightly above 1985's 2.3-percent increase.

The 1987 food outlook includes a sharp reduction in beef output and higher prices. But meat supplies will be supplemented by larger poultry meat production and generous crop-food supplies. Also, inflation in the economy is expected to remain at a dampened growth rate of 3 or 4 percent and retail food prices may be up only 2 to 4 percent.

The Global Agricultural Supply-Demand Imbalance and U.S. Government Outlays

The Food Security Act of 1985 became effective with the 1986/87 marketing years for most commodities (rice and milk began in 1985/86). The Act was designed to deal with concerns stemming from losses in farm exports, including farm financial stress and mounting budgetary costs for agricultural programs.

Agricultural prospects for 1986/87 suggest that the volume of agricultural exports will increase, but crop prices likely will remain at reduced levels. Several years will be needed for the lower level of world prices, resulting from the reduction in U.S. loan rates and the weaker dollar, to significantly impact on crop production and use in both competing and importing countries. Too, productivity gains likely will continue around the world, making more difficult a narrowing of the supply-demand imbalance.

U.S. farm income is somewhat protected by Government payments in this interim period of slowly growing global demand and slightly dampened production expansion. So, U.S. Government outlays for price support programs likely will remain at high levels.

Acreage

Global acreage of wheat, feed grains, and soybeans has been slowly declining in the 1980's, about 0.3 percent per year. The U.S. decline also has been about 0.3 percent.

U.S. acreage has declined because of Government acreage reduction programs. Under annual programs, producers removed 40 to 45 million acres of cropland from production in 1986, up from 31 million in 1985 and a little over one-half

of the record 77 million removed in 1983. Even with reduced acreage, increasing crop yields have kept U.S. production near or above use levels that declined over 1 percent annually. Thus, a faster expansion in demand will be needed over the next several years to offset productivity gains, assuming no additional significant cuts in acreage. Faster demand expansion than production gains should eventually increase prices and reduce Government price support outlays.

Productivity

Yield gains have been the source of crop output expansion in the 1980's, although acreage has grown for crops in some countries, such as wheat acreage in Canada. Combined world production of wheat, feed grains, and soybeans has grown about 2.7 percent annually in 1980 to 1985 (average 1979-80/81 to 1984/85-85/86), all of which resulted from yield increases, since acreage declined nearly 0.3 percent annually.

Production in countries abroad increased 2.6 percent yearly, all due to yields, since acreage declined 0.3 percent annually. The 1.6-percent annual increase in U.S. production was due to higher yields, since acreage declined 0.3 percent. The yield gain in other countries of 3 percent annually is 50 percent above the 2-percent U.S. increase.

Productivity gains are particularly dramatic for some crops. To illustrate, wheat production abroad gained 3.5 percent annually, in spite of 0.2-percent downturn in acreage because of 3.7-percent annual yield gains. U.S. yields rose at a 2.3-percent rate, more than offsetting declining acreage of 1.6 percent annually, pushing up U.S. production 0.6 percent. Wheat productivity gains in other countries are increasing 60 percent faster than in the United States, reflecting growing use of higher-yielding varieties in other countries as well as improved management practices.

Even with yield gains, however, crop production abroad is increasing less in the 1980's, at 2.6 percent yearly, than the 2.8 percent in the 1970's.

Demand

The growth in world consumption of major crops in the 1980's has slowed to 1.4 percent yearly, from 3 percent in the 1970's. The worldwide recession and financial problems of the early 1980's caused the slowing rate of use. Too, this caused the expansion of consumption in other countries to slow from 3.5 percent yearly to about 1.3 percent.

Thus, the imbalance between consumption and production in the 1980's has been due to the slower growth in consumption. For grains, the consumption drop has been the greatest in industrialized countries abroad and in centrally planned economies.

World trade in major crops has declined 0.4 percent annually in the 1980's, down from annual increases of over 6 percent in the 1970's. The decline in trade in the 1980's reflects dampened consumption, greater self-sufficiency in several countries, and barriers to trade in some countries.

Agricultural imports have declined for both industrial countries and in countries with centrally planned economies. To illustrate, in the 1980's, industrial countries have shown a steep decline in imports of wheat and feed grains, 6.4 percent annually, as EC imports have fallen sharply. The centrally planned economies also have shown a significant decline, reducing imports 2.8 percent annually.

Developing countries have expanded imports 3.9 percent annually in the 1980's, although well below the 9.4 percent in the 1970's. The rate of increase in consumption of grains in the developing countries has continued to outpace production in the 1980's. Assistance from industrialized countries has supplemented supplies and consumption in these countries. In 1986/87, these countries will account for over one-half of world grain trade.

Countries with centrally planned economies have shown a dramatic turnaround in grain imports from the 1970's to the 1980's, with an annual growth of 5.1 percent in the 1970's turning into a yearly decline of 2.8 percent in the 1980's. Consumption growth slowed to less than 1-percent growth in the 1980's from 3.6 percent.

So, even in centrally planned economies, there has been almost no growth in consumption, partly due to financial constraints. Also, policy changes have caused import reductions. In Eastern Europe, debt problems have led to a cutback on agricultural consumption and imports in the 1980's. In China, expanding crop production has led to a sharp reduction in imports, reducing levels of global trade for both grains and cotton. In contrast, the Soviet Union has continued to heavily depend on grain imports to expand meat production, providing support to, and instability in, the level of global grain trade.

Meat production and consumption are expanding in both the Soviet Union and China, with Soviet per capita use about three-fifths of the U.S. level and China only about one-fifth. Per capita meat consumption likely will continue growing over the next few years. The Soviets may meet some of the extra feed-stuff demand through better yields from more intensive production practices, but grain imports are expected to remain substantial. Potential demand for meat consumption and feed use are considerable in China; but China now seems intent on exports of grains (corn), rather than imports. This export surplus could well continue over the next few years, or until the demand for feed and meat again outpaces domestic supplies.

U.S. Implications

The sharp decline in U.S. agricultural exports in the 1980's, thus, has been due to developments abroad related to: expanding agricultural output, especially the growth in productivity; dampened consumption expansion, caused by the worldwide recession of the early 1980's; and increased self-sufficiency in food production, resulting from policy changes. Over the next several years, competition will remain intense for world markets, but lower prices should slow productivity gains and market growth should pick up as global economic growth recovers.

U.S. farm income has come increasingly from the Government in the 1980's, with the decline in agricultural exports and in farm prices. Direct payments alone in 1986 are expected to amount to \$12 or \$13 billion, accounting for over one-fourth of net cash income of some \$44 billion. In the 1970's, direct payments accounted for about 7 percent of cash income.

The outlook for the next few years is for a continuation of large Government payments. Market prices likely will remain under pressure because of slowly growing demand and relatively large commodity supplies.

U.S. net outlays for price support programs, thus, likely will remain at increased levels. Outlays rose to a new record of around \$25.5 billion in fiscal year 1986, up from nearly \$17 billion in 1985 and the previous record of around \$19 billion in 1983. Exposure to large Government outlays likely will continue for the next few years, particularly for deficiency payments. For wheat and feed grains, for example, payments likely will remain relatively large because target prices can be reduced only 2 to 5 percent annually to a maximum of 10 percent for 1990 crops. At the same time, loan rate reductions generally would be covered by payments since market prices may not average much above loan levels.

Government outlays over the next several years, thus, will depend importantly on the level of prices resulting from the interaction of global commodity supply and demand. Or, more specifically, outlays will be directly related to the level of U.S. crop prices that will be determined by productivity gains here and abroad, and by the expansion in world agricultural consumption, trade, and the U.S. trade share.

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THE OUTLOOK FOR U.S. AGRICULTURAL TRADE

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In November, the U.S. Department of Agriculture released, as it does every month, its estimate of world crop production. It forecast:

--A record foreign wheat crop of 457.1 million metric tons.

--A record foreign coarse grain crop of 579.6 million metric tons.

--A record foreign oilseed crop of 136.5 million tons.

The November report, and its litany of records for foreign growers, produced no great reaction in the commodity markets. Most traders were already anticipating these bumper crops. But this steady climb in foreign production to new highs almost every year is of profound significance to the outlook for U.S. agricultural trade. It means a continuation of the supply/demand balances that have existed for the past five years. It means that again in 1986/87 our agricultural export trade is not going to be conducted in a world of scarcity, but in a world of surpluses. It means that we are going to continue to face competition for a dwindling number of markets. And it means, as we have said before, that the steep climb we saw in our exports during the 1970's is not likely to be repeated--at least in the foreseeable future.

The new realities of the world's agricultural situation mean we cannot base our forecasts of future export performance on the trend lines established in the past. Instead, we must go "back to basics" and examine the fundamentals of world agricultural supply and demand in order to get a feel for what we can realistically expect in the way of growth in our agricultural exports in 1986/87 as well as for the next few years.

The Supply Situation

As I mentioned earlier, good-to-excellent world output was recorded for most commodities in 1986, with new records chalked up for wheat and oilseeds. These bumper crops are following on the heels of a succession of record or near-record crops produced earlier during the 1980's--and they promise to augment an already serious surplus problem for many commodities.

It used to be that the United States was the only country with an agricultural surplus. Today 25 nations have surpluses. The United States is holding 200 million tons of grain and 15 million tons of soybeans. The European Community has 20 million tons of surplus cereals, 800,000 tons of meat, and over a million tons of butter. China is holding a huge cotton surplus. Taiwan is paying its farmers to feed its surplus rice to hogs. Even Finland and Saudi Arabia now have grain surpluses.

In all, world stocks of wheat now amount to almost 1-1/4 years worth of typical consumption. The world also is carrying stocks amounting to 1 year and 10 months' worth of coarse grain use and 8 months' of soybean consumption.

The Demand Outlook

World demand for agricultural products can be expected to make modest growth in the years ahead. We are still seeing increases of about 1.7 percent a year in the world's population--and world economic growth is projected to expand at perhaps 3 percent a year over the next five years. That's a little higher than the rate expected to be achieved during 1986, when growth in the world's economies were constrained by declines in raw commodity prices and the drop in the value of the dollar.

The most rapid economic growth--perhaps averaging more than 5 percent a year--is expected to occur in the newly industrialized countries of the Pacific Rim. Their export sectors are benefitting from their currencies' link to the U.S. dollar. With the dollar declining, they have gained an edge in the U.S. market over Japan, their chief competitor.

Korea, in particular, is enjoying a surge in its economy. Growth in its gross national product ranged between 13 and 14 percent, on an annualized basis, during the third quarter of this year. The strength of Korea's economy coupled with that country's trade surplus of over \$5 billion with the United States offer good opportunities for U.S. exporters. However, to expand sales substantially will require effective market promotion activities and trade policy actions that improve access to this \$3-billion agricultural market.

In the major industrial countries, economic growth is expected to be fairly sluggish, which will have negative impact on the expansion of world trade. In Japan, the rapid appreciation of the yen since September 1985 from just below 240 to 156 per dollar on average during October 1986 is dampening the business activity among Japan's small- and medium-size industries.

The 12 economies of the European Community are among those expected to show the slowest growth in the industrialized world in the coming year. Unemployment is expected to continue high--around 10 percent for the four major industrialized nations of Germany, France, the United Kingdom and Italy. However, unemployment in Spain, one of the newest members of the European Community, was expected to exceed 22 percent in 1986. In addition, a slack rate of growth in the demand for goods and services and the slow pickup in the pace of imports in response to the declining dollar are likely to restrain the region's demand for agricultural products, particularly livestock products and imported feed ingredients.

For developing countries, economic growth will continued to be restricted by large debt service obligations. Real interest rates remain historically high, but it is possible they may decline over the next several years. Such a decline will reduce some of the debt service payments on variable rate debt and thus tend to ease the debt payment pressure on the developing countries. In addition, as the recent International Monetary Fund agreement with Mexico demonstrates, new loans and credit are available to reduce debt burdens. If they can get such loans, it will help indebted countries to continue to import priority products while growing domestically and repaying their debts.

One special case in the developing world is Brazil. Recent monetary reform in that country has released a great deal of pentup demand for food products and other consumer items. As a result, that country is exporting somewhat fewer agricultural products and it has stepped up its imports of food items, particularly meats, as well as wheat and soybeans. This is very likely a short-term phenomenon, but it is one that will offer opportunities for U.S. exporters.

A general point to keep in mind about developing country markets is that many are being hurt by the price pressure exerted by the huge agricultural surpluses in the world today. Virtually all commodity prices are depressed--and many of these countries rely heavily on sales of agricultural commodities for their economic growth potential and to generate foreign currency for debt repayment.

The oil-exporting nations will have smaller revenues with which to finance imports in 1986/87, as a result of the continued weakness in world oil prices. The 50-percent decline in oil export prices since 1985 is expected to result in an immediate loss in real income for oil exporting countries equal to 6 or 7 percent of their gross domestic product.

The centrally planned economies of Eastern Europe and the Soviet Union are striving for growth rates of 4 percent annually in their net material products, according to their 1985-90 five-year plan. However, these goals are generally more ambitious than anything that can be realistically obtained. Growth rates so far in 1986 suggest the expansion rate in Eastern Europe will be about 2 percent, and only a slight improvement over that level is expected for 1987. In the Soviet Union, an expansion rate of 3 percent seems likely this year with the rate slowing to 2 percent next year.

In contrast to the growth sought in Eastern Europe and the Soviet Union, China is trying to slow its economy down after achieving growth rates of nearly 14 percent in 1984 and 12.5 percent in 1985. China's gross national product appears likely to expand by only 6 percent in 1986 and hold at about that level next year.

To sum up, there is nothing on the economic horizon that provides a basis for anything more than modest increases in world demand for agricultural products over the next year.

The U.S. Agricultural Export Outlook

While U.S. agricultural exports will have to take place in an atmosphere of intense competition in 1987, as we vie with other suppliers for the available markets, our export position is the best it has been for several years. Declines in the U.S. dollar have made U.S. products less expensive for foreign buyers. This is particularly beneficial to our specialty crops and products. In addition, the lower loan rates provided for by the Food Security Act of 1985--and consequent lower prices--mean we are capable of becoming a fully competitive player in world trade.

The high prices associated with U.S. commodities under the previous farm bill had put us in the position of being only a residual supplier in the world marketplace. Foreign buyers came to us only after they had bought all they could from competitors who could offer them lower prices. Now, at least, U.S. exporters have a chance to be more competitive on the basis of price.

In fact, since June of this year, when the new price levels set by the 1985 farm bill first went into effect, we have seen a steady increase in the volume of our agricultural exports. Since August, these exports have topped year-earlier levels. We are currently projecting further--albeit modest--increases in the volume of our sales during fiscal 1987. We foresee gains of 3 percent for soybeans, 4 percent for wheat, 11 percent for coarse grains, 18 percent for rice, and more than a tripling in sales of cotton. In all, we are projecting export volume for the year will reach 116.5 million metric tons. This will be a gain of 6 percent over last year's level--and a sign that the 1985 farm bill is working, that we are seeing a turnaround in our agricultural export situation.

However, as I mentioned earlier, there is nothing on the economic horizon to suggest anything more than a gradual increase in our export volume. On the supply side, the situation remains very competitive--and the world's largest grain importer, the Soviet Union--has harvested the biggest grain crop it has had in many years.

As for export values, the lower prices that are helping us to achieve larger sales in the world marketplace will restrain any increase in the dollar value of U.S. agricultural exports during fiscal 1987. In fact, at this point we are projecting an export value of about \$26 billion, little changed from the 1986 level of \$26.3 billion to perhaps \$26.0 billion.

We will continue to run a surplus in our agricultural trade--however, it will be down from the levels of the early 1980's. Our current projection indicates the U.S. agricultural trade balance in fiscal 1987 will be about \$6.0 billion, versus \$5.4 billion in fiscal 1986.

The Years Ahead

U.S. agricultural export prospects for the rest of this decade will be greatly dependent on what is achieved during the Uruguay Round of Multilateral Trade Negotiations, which was launched under the auspices of the General Agreement on Tariffs and Trade last September.

Most of the world has yet to realize and adjust to the dramatic changes which have taken place in the world's supply situation. We still see many countries providing incentives to their farmers to step up their production of commodities when the world already has mountainous stocks of these items.

The notion that surpluses, rather than scarcity, are threatening the international order is simply too revolutionary for many countries to grasp. I suspect many of them would also like to cling to the simpler past, when their domestic agricultural policies did not always have to be weighed and measured in light of the international consequences.

The United States sees the Uruguay Round as the best hope of producing a global solution to the problems now besetting world agriculture, a solution that will benefit agricultural systems in all nations.

This Administration has three specific goals for the new round:

- To freeze the present level of direct and indirect subsidies that directly or indirectly impact on trade and eventually phase them out;
- To apply no new import barriers and to phase out existing barriers; and
 - To harmonize food, plant and animal health regulations.

In addition, the United States wants improvement in general GATT dispute settlement procedures so that once trading nations have agreed on better rules, we can be assured these rules will be applied consistently and dependably. As it stands now, procedures are too easily blocked by the parties to a dispute when they believe the rules have been interpreted to their disadvantage.

Resolving the subsidy question is essential if the world is not to sink under the burden of massive oversupplies. The United States has no export future, nor do any of our competitors, if agricultural production continues to spiral upward unchecked by any market realities. World prices are already reeling as a result of export subsidy programs carried out by the European Community and the United States. In truth, our participation in the subsidy game has been forced on us by our competitors. We realize this is a game where, ultimately, the only real winners are the buyers, never the sellers. Thus, for the stability of the international trading order, the subsidy issue must be resolved.

Equally important to the future of U.S. agricultural export prospects is the reduction of import barriers. The increasing trend toward protectionism is a threat to all nations who rely heavily on trade, but it is particularly damaging to developing country economies.

The developing world accounts for three-fourths of the world's population, and as these countries grow economically, their people seek dietary improvements and a better standard of living. Thus, a key to resurgence of U.S. agricultural exports will be to foster policies--in the multilateral trade negotiations and also unilaterally--that will help less developed economies grow.

Admittedly, these nations will end up competing for some of the same markets supplied by U.S. producers. But as their economies improve, they will become bigger and more reliable customers for U.S. farm products--which is to our long term advantage.

Conclusion

To sum up the agricultural trade outlook, then:

- o We anticipate some upturn in the volume of U.S. agricultural exports during fiscal 1987. Population increases and improvement in some sectors of the world economy--especially in the Pacific Rim--should bolster world demand. And because of the 1985 farm bill, U.S. exporters are now in a position where they can compete more successfully for world markets.
- o Export values will remain near last year's level as lower prices for program commodities offset the larger sales volume.
- o Imports are expected to show very little change from last year's level of \$20.9 billion.
- o We will continue to run a positive balance of about \$6 billion in our agricultural trade.
- o While we are unlikely to see a return to the steep growth rates of the 1970's, modest increases in agricultural exports are possible now that the United States is once again more price-competitive. However, much will depend on developments during the Uruguay Round of Multilateral Trade Negotiations--and whether we are successful in controlling the use of subsidies and checking the increase in protectionism around the world.

END

ANNUAL AGRICULTURAL OUTLOOK CONFERENCE

United States Department of Agriculture
Washington, D.C.



GLOBAL TRENDS IN AGRICULTURAL SUPPLY AND DEMAND

Wide-ranging supply and demand developments combined in the 1970's and 1980's to increase both the importance of the United States in the world market for farm products and the importance of the world market to the well-being of U.S. agriculture. To provide any sort of insight into global trends in agricultural supply and demand, it is essential to briefly review the events of the past two decades.

In the 1970's, developments in supply and demand worked both to expand world agricultural trade and to increase the U.S. share of the market at an unprecedented pace. World trade expanded four-fold while U.S. exports increased six-fold. By 1980, more than one-third of our cropland was committed to producing for export while 2-of-every-5 tons of the farm products traded were produced in the United States.

Many of the same factors worked in reverse in the 1980's. Growth in world agricultural trade essentially stopped, and U.S. exports dropped one-third. This 55-million-ton drop in U.S. exports, following on the heels of the 1970's 100-million-ton run-up, lies at the heart of many of the problems we face in agriculture today. We are in the midst of a far-reaching restructuring of the sector. Complicating this is the limited ability of the world market to react to swings in global supply and demand without having the sharp price adjustments transmitted to the countries linked to the market.

Remarks by Robert L. Thompson, Assistant Secretary for Economics, U.S. Department of Agriculture, at Outlook '87, the 63rd Annual Agricultural Outlook Conference, U.S. Department of Agriculture, December 2, 1986.

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Unprecedented Growth of the 1970's

The 1970's saw unprecedented growth in the world market for farm products, particularly those produced in the United States. This expansion was due to slower growth in global agricultural production and increased consumption abroad.

Growth in agricultural production in foreign countries slowed from 2.8 percent a year over the 1950's and 1960's to 2.2 percent in the 1970's. Consumption growth also slowed but the drop was significantly smaller--from 2.9 to 2.7 percent. The widening gap between overseas consumption and production increased the rest of the world's dependence on U.S. production. Growth in world agricultural trade increased from 3.5 percent a year in the 1950's and 1960's to 4.7 percent in the 1970's, while annual growth in U.S. exports grew from 4 to over 10 percent a year.

Factors in the Widening Gap

The factors underlying the widening gap between growth in consumption and production abroad have been well documented. Falling commodity prices and farm incomes discouraged investment in agriculture in much of the 1950's and 1960's. In low-income countries, industrial development often was undertaken at the expense of agricultural development. This constrained their farm production increases in the 1970's. Growth in demand for farm products shared in a general economic expansion as rising incomes allowed consumers to upgrade and diversify diets. Much of this growth initially was met through local increases in agricultural production. But, with limited capacity to produce locally and crop shortfalls a problem, many countries turned to the world market as a regular source of supply.

Rapidly expanding world trade, low-cost credit, and the low value of the dollar permitted a sharp increase in food-buying power in importing countries. Faced with many of the same financial considerations as the middle-income countries and political pressures to upgrade diets of their own, the centrally planned economies also revolutionized their agricultural and trade policies. The Soviets, Eastern Europeans, and Chinese all became regular participants in the world market and eventually grew to overshadow the middle-income countries.

Trade Reversal of the 1980's

Many of the same factors which worked to expand trade in the 1970's worked in reverse in the early 1980's. While growth in agricultural production abroad rebounded from 2.2 to 2.6 percent a year with expanded investment in agriculture and more normal weather, growth in consumption has dropped off sharply.

Many observers have focused on overseas production growth, but to account for changes in global trade, the consumption decline has been a more important factor. In the 1970's, the annual average increase in foreign grain production was 24 million tons; this was exceeded by consumption growth of 34 million. Consequently, foreign net grain imports grew by 10 million tons a year. However, in the 1980's, growth in foreign grain output has risen to 29 million tons, while consumption growth plunged to 19 million a year. The 10-million-ton yearly increase in net foreign grain imports of the 1970's was replaced by a 10-million-ton annual decline in the deficit during the 1980's.

Very important in this reversal was the slowdown in global economic growth. The decline was pronounced enough in most middle-income

countries to drop real--and in some cases--nominal incomes. As a result, the growth in per capita food consumption in the 1980's has slowed to less than two-thirds the pace of the 1970's. With domestic production growing faster than consumption, many importing countries have limited--and in some cases reversed--their growing dependence on imports.

Changes in the international financial environment also have worked to encourage less dependence on imports. Growth in the middle-income countries' export earnings fell precipitously from more than 20 percent a year at the end of the 1970's to less than 3 percent with the general contraction in world trade and drop in primary product prices in the early 1980's.

The centrally planned countries also face serious problems with their export earnings. For example, after increasing from \$2 billion a year in 1970 to more than \$23 billion in 1980, the Soviet Union's hard currency exports have dropped in the 1980's.

The tightened supply and rising cost of credit also has worked to discourage imports in the early 1980's. With the value of the dollar up sharply, the local currency cost of transactions carried on in dollars--including repayment of debts incurred in the 1970's--also has risen sharply. These factors have forced many developing countries to reduce imports and allocate their scarce foreign exchange to servicing their accumulated debts, and also encouraged many developed countries to slow or reverse growth in imports.

Maximized U.S. Burden

In addition to the macroeconomic and financial constraints which slowed the growth in world demand and in investments to expand foreign

agricultural production, U.S. farm policies interacted with policies abroad to maximize the U.S. adjustment burden. High and rigid price supports set without regard for market conditions made it difficult for U.S. producers to sell their products overseas. Many foreign exporters, particularly in developed countries, maintained high production subsidies and dumped resulting surpluses on world markets. In this environment, the U.S. Government and the taxpayer bore a large part of the cost of adjusting to slowed growth in trade.

Let's now look at what I foresee as the specific trends ahead in world commodity supply and demand.

Prospects for the Late 1980's

The international trading environment is expected to improve over the rest of the 1980's. Macroeconomic and financial conditions are brighter than during the first half of the decade. Foreign economic growth has moved into the 2.5-to-3-percent-a-year range where it is likely to remain for several years. This is about half the rate of the 1970's but well above the early 1980's. Expanding incomes and global trade, declining inflation, and lowered interest rates are providing the basis for recovery in purchasing power. In addition, the world will add another 80 million people a year in the late 1980's. In this environment, growth in foreign demand for farm products could double the early 1980's rate of 1 to 1.5 percent a year.

There is much uncertainty over foreign production growth prospects. Some contend the technological foundation is in place for production growth in foreign countries which will further narrow the gap between consumption and production. It is important to weigh the political and

economic factors that are likely to slow production abroad. Higher-than-expected costs of farm policy in the face of budget constraints will make it difficult for many countries to continue the policies that stimulated larger production in the early 1980's. To some extent, low world commodity prices and the declining U.S. dollar will deter production-expanding investments made attractive during the optimistic market conditions and prospects of the late 1970's.

The combination of more normal demand growth and trend growth in supply suggests world farm trade increasing 3 to 4 percent a year in the late 1980's, similar to the 1950's and 1960's. With the United States improving its price competitiveness under the aggressive marketing provisions of the 1985 Farm Bill, the volume of U.S. farm exports could rise 4 to 5 percent a year during the late 1980's.

Regional Trends for Grains

An examination of the regional trends for grain documents not only the sources of our current disarray but also the obstacles to export growth.

In the foreign developed countries, increasing self-sufficiency has severely contracted available export markets. In the 1970's, the European Community was a large net importer of grains. In the mid-1970's, net EC grain imports were about 25 million tons--a fifth of world trade. By 1985, the EC was a net grain exporter of 16 million tons. That change reduced the size of the world market available to the United States by 40 million tons a year in a decade. With production heavily subsidized and little growth in internal demand, the EC is likely to continue increasing grain exports in the foreseeable future.

The composition of EC feed consumption also will have a major impact on world grain markets. In 1975, feed use of wheat, coarse grains and cereal substitutes totaled 89 million tons; this rose to 102 million by 1985. However, coarse grains were a casualty of this growth. Propelled by lower relative prices, wheat feed use rose by 13 million tons and cereal substitute imports--mainly manioc and corn gluten feed--rose by 9 million. Wheat and cereal substitutes together displaced coarse grains whose consumption fell by 9 million tons.

The EC is likely to provide keen competition for the United States over the next several years as high internal coarse grain prices continue the production incentive, stimulate more wheat feed use, and encourage production and use of cereal substitutes.

Centrally Planned Countries

In the 1970's, net grain imports of the centrally planned countries went from 5 million tons to 63 million in 1981, accounting for fully one-third of world grain trade. With sharp increases in production, the centrally planned countries are expected to have net imports of only 27 million tons this year--15 percent of world trade. That would be a net reduction in the world market available to the United States of 40 million tons since 1981.

The sharp drop in net grain imports in centrally planned countries between 1984/85 and 1985/86 was a major factor behind the decline in world trade. The total volume of world trade fell by 39 million tons, and smaller centrally planned economy imports accounted for 24 million tons of that total drop. An important issue for projecting world trade in the late 1980's is whether global grain imports will rebound quickly

to the pre-1985 level and grow from there, or remain low and grow slowly from the 1985 level.

Although weather could cause the USSR to import large volumes of grain in selected years, the underlying trends suggest the centrally planned countries as a group will not be a source of growth in world trade in the late 1980's. The Soviet Union has greatly reduced wheat feed use and is promoting more intensive production practices. It seems likely to move toward greater self-sufficiency in wheat as have China and Eastern Europe.

Soviet coarse grain production, including silage and forage, has expanded at a rate slightly greater than consumption. Aggressive meat production goals suggest a modest increase in imports of coarse grains over current reduced levels is possible. Rising production and level use have lowered net coarse grain imports in Eastern Europe and turned China into a net exporter. Increased livestock product demand eventually could change China into a net importer--but that may be a few years away.

Less-Developed Countries

The less developed countries (LDC's) offer a sharp contrast to the increasingly competitive exports from other developed countries and the stagnant imports of the centrally planned countries. Between 1970 and 1980, LDC net grain imports increased from 18 to 53 million tons. But, unlike the EC and centrally planned countries, their imports have continued to grow in the 1980's, reaching 68 million tons by 1984. Growth has stagnated in the last 2 years but the developing countries are our potential growth market for the future. The current forecast of total LDC grain imports for 1986/87 about equals the 1984 record.

The LDC's net imports of wheat have stabilized in the 1980's with production and consumption growing in tandem. Net imports of coarse grains may set a new record high in 1986/87, reflecting continued increases in consumption every year since 1982.

The LDC coarse grain market should continue to be a bright spot for agricultural trade. Nevertheless, the large annual gains of the 1970's may not be repeated due to slower growth in income and foreign exchange earnings, continued high debt-service requirements, and increasing competition from feed wheat and cereal substitutes. Trade prospects appear most favorable in East Asia (largely South Korea, Taiwan and Malaysia) where consumption and imports have doubled over the past 10 years; in North Africa and the Middle East (most noticeably Saudi Arabia) where imports have increased more than four-fold during the last 10 years; and, in Middle America (Central America and Mexico) where consumption is expected to continue to outpace production.

With moderate demand growth for grains in the late 1980's and low prices both reducing the incentive to produce and expanding the U.S. trade share, total U.S. grain demand could return to the levels of the late 1970's by the end of the decade. However, increasing U.S. productivity and large existing stocks will require heavy reliance on acreage reduction programs throughout the period if grain markets are to move toward supply and demand balance.

Cotton, Rice, Soybeans

The prospects for other major commodities during the medium-term are mixed. Cotton and rice exports appear likely to sustain the rapid recovery in exports expected this year under the marketing loan program.

Low cotton prices relative to manmade fibers and consumer preference for cotton are likely to push global demand upward. With domestic use also strengthening and farm productivity gains small, the U.S. cotton market may quickly move toward supply and demand balance in the next few years. The U.S. rice market appears likely to see export increases eventually limited by the slow growth in world trade and partly offset by farm productivity gains. Rice stocks may decline slowly, forcing continued reliance on acreage reduction programs.

The steady increases in U.S. soybean acreage during the 1960's and 1970's are likely past. Moderate increases in global livestock production combined with greater soybean and protein meal production in South America and Europe will limit U.S. soybean and soybean meal exports. U.S. soybean exports could retain 75 to 80 percent of a slowly growing world market, but the soybean meal export share could drop slightly under more intense product-market competition.

On balance, the underlying market prospects just presented project a slow growth in world trade for major commodities. The policy provisions of the 1985 Farm Bill provide the tools to restore U.S. agricultural competitiveness and permit us to capture a significant part of the growth in world agricultural imports. The key question then is whether income growth will be fast enough and widely enough distributed to reverse the slowdown in demand growth of the early 1980's.

Agricultural Competitiveness

While the 1985 Farm Bill helped, we need to be vigilant to ensure that U.S. agriculture remains internationally competitive. Fertile soil and favorable climatic conditions account for only part of American

agriculture's comparative advantage. Much more rests on the cumulative investments that have been made in agricultural research and extension over the past century. These investments have given American agriculture one of the fastest rates of growth in productivity of any sector of the U.S. economy.

Modern U.S. agriculture is a high-tech industry. Remember, in the 1930's, there was no perceptible difference in crop yields among the United States, England, India, and Argentina. But in the 50 years since, U.S. yields have shot upward. U.S. agricultural productivity grew faster than in other industries and faster than agricultural productivity in other countries. This, more than anything else, accounts for the great increase in U.S. farm exports relative to other suppliers.

Unfortunately for us, many other countries have caught on to the source of our growth. While our rate of investment in agricultural research has stagnated in the past 15 years, many other countries have substantially increased their agricultural research and development investments. This is closing the productivity gap between the United States and other countries' agricultures. So one might say that we now find ourselves on a global technology treadmill and that we must keep investing to maintain productivity growth to maintain our position of predominance relative to other agricultural exporting countries.

Maintain R&D Support

So my first prescription for improving the global competitiveness of U.S. agriculture is to increase the rate of technological advance by maintaining support for agricultural research and development. We are poised on the threshold of a new technological revolution in agriculture,

that of biotechnology or genetic engineering. This revolution has the potential to increase agricultural productivity and reduce our unit costs of production by yet unknowable means.

The biotechnology revolution is no more stoppable than was the Industrial Revolution, and it holds similar potential for improving the future well-being of mankind. Those who would slow or stop this new development remind me of the attempts by the Luddites who threw their wooden shoes into the gears of early Industrial Revolution factories. There may well be valid reasons for caution with respect to genetic engineering, but we must recognize that it can provide great productivity growth, and countries which permit it to proceed will reap increased international competitiveness.

Avoid Masking Comparative Advantage

The second prescription for improving the global competitiveness of American agriculture is to avoid public policy measures that artificially mask our underlying comparative advantage. In the 1985 Farm Bill, we took a large step in this direction by dropping loan rates to market-oriented levels. This removed an important impediment that was pricing us out of the international market.

Nevertheless, there still are those who would raise farmers' incomes by artificially restricting the volume of agricultural production through mandatory supply controls. The resulting price increases would reverse the progress made in the 1985 Farm Bill and set in motion a permanent down-sizing of our farm sector as we forfeited the export market to less efficient competitors and likely sent our livestock and poultry sectors overseas, too.

Acreage Reduction Programs

But there are other aspects of current farm policy that continue to impede our competitiveness. One is acreage reduction programs. To qualify for deficiency payments every farmer must retire a certain fraction of his acreage base, for example 20 percent in corn. This means, in effect, that we ask every firm in the industry to spread its total fixed costs over 80 percent of its potential output. This raises the national average cost of production, relative to our competitors who suffer from no such constraints.

Moreover, we have long relied on policies which create artificial scarcity of farmland, thereby bidding up its price to a higher level than otherwise would have occurred. This applied to the old soil bank program of the 1950's and 1960's; it applies to our acreage reduction programs; and it could apply to the conservation reserve. Larger income streams associated with direct Government payments and price supports increase the returns to farmland. Together, all of these factors increase the price of U.S. farmland beyond what it otherwise would be, and raise our cost of production relative to that in competing countries.

The recent land price deflation has caused significant financial stress to those farmers who borrowed substantial sums to buy that land. In the long run, this write-down of land values will contribute a great deal to restoring our international cost competitiveness relative to other suppliers, like Argentina, which never let its land prices get bid up to such high levels as did the United States.

Protectionism and Freer Trade

To restore agricultural competitiveness and maintain comparative

advantage, we must avoid protectionism, which reduces the foreign exchange earning capacity of countries that buy our farm products. What comparative advantage is all about is the relatively most efficient suppliers of each good being able to sell those goods overseas, and thereby generate foreign exchange earnings that can be used to buy goods of which other countries are relatively more efficient producers.

We can't have it both ways. If we aspire to export those farm products in which we have a comparative advantage, we must be willing to buy the products in which our export buyers have a comparative advantage.

We now are entering a new round of international trade negotiations designed to reduce barriers to international trade and to reduce subsidies on a wide range of goods and services, including agriculture. American agriculture has a great deal to gain from a freer and more open international trading environment which would lead to faster global economic growth and particularly in the Third World. Many of the goods in which U.S. agriculture enjoys a comparative advantage are goods whose consumption increases rapidly during economic growth.

Freer international trade, faster global economic growth, and successful resolution of the LDC debt problem are the three key factors that will determine the speed of agricultural export recovery.

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GLOBAL TRENDS IN THE LATE 1980'S--ALTERNATIVE PERSPECTIVE

Geoff L. Miller

Secretary, Australian Department of Primary Industry

Hello Mr. Chairman, ladies and gentlemen, the first thing I would like to do is thank the Secretary for Agriculture, Richard Lyng, for his invitation to be here. It is indeed a great privilege to have the opportunity to address once again the United States National Agricultural Outlook Conference. Many of you in this room will have heard a lot from Australians during the last 12 months in circumstances where we've made judgements that the farm policies of this country and of other countries have had adverse effects on our farmers. Now our farmers have had a 50-percent reduction in their income during the past 2 months. I've made some five trips around the world studying farm policies of other countries, of the United States, of the EEC, and Japan in particular, now I've come to the conclusion as a result of that exercise that Australian farmers are much better off than other farmers in any one of those three major regions. And the reason for that is that the countries with the most complex apparatus for supporting the income of their farmers, generally speaking, are the countries who have farmers with the lowest income.

If we look at the chart that I've shown there, which is based on 1980 data, at that time the United States was up there amongst the countries whose apparatus wasn't responsible for the maintenance of farm incomes, but if we look at Japan, Germany, Italy, France, Sweden, Denmark, and the United Kingdom, the countries with the complex apparatus for supporting their income are down at substantially lower levels. As I've studied the farm programs of these countries and have been involved in international treaty negotiations in relation to agriculture, I have come to the realization that there is a very poor understanding of the agricultural policies of the EEC and the United States, and almost nobody outside of Japan understands Japanese agricultural policies. Sometimes I wonder whether there are many in Japan who do.

Mr. Chairman, as a result of having gone through this exercise, I committed myself, perhaps somewhat idealistically, to trying to find out if was a way through this international agricultural policy mess that all of our farmers have found themselves in. During the course of the year I developed a monograph which has been distributed to you today.* I call it my little gold book. I've tried in this little gold book to set out the details of the farm programs in each of the countries, how they work, what their economic effects are, and then see if I could chart a course through them.

* The Political Economy of International Agricultural Policy Reform, Geoff Miller, Department of Primary Industry, 1986, 130 pp. Limited copies available from R. Bridge, WAOB, Rm. 5143 South Bldg., USDA, Washington, D.C. 20250.

Now idealist and a economist I may have been, but I've become a political realist, and as a political realist I've had this tremendous competition going on inside me. On the one hand I'm saying it's got to be a way to get us out of this mess. On the other hand, every time I come to the United States and look around the Congress and visit lot of people here, and every time I travel around Europe and visit the agricultural people in each of the European countries I say to myself, "Geoff, what is the use of this? You might as well go home and administer your own Department and look after farmers, because you are not going to get anywhere trying to change the farm policies of other countries." Now let me say to you, as I was beavering away in the middle of the night in the last three weeks, burning the midnight oil, to try to finish the document, there were several times in which I despaired that it really wasn't worthwhile. The thing that relieves me of that despair is the fact that in all of those countries I've found exceptionally able people working to try to reform farm programs. That has given me some heart, but I believe that those people will need to have the political constraints lifted a little if they are going to be able to get anywhere. And from now on I'm going to talk as though I believe that it is feasible and politically possible to deal with this international agricultural policy reform problem, even though I know it's going to take us a long time.

In order to lift the constraints on reform we've got to do three things. First, we have to dramatize the problem; second, we have chart a way through the very complex political path that has to be wound through; and third, we have to multilateralize the problem.

The crisis that faces us in world agriculture is the worst since the great depression. If you look at the chart now on the screen, you can see that stocks in this decade have risen 69 percent, while prices are down 45 percent. If we look at butter, butter stocks are up 1.7 million tons; prices have plummeted by 50 percent. If we look now at sugar, the chart is a little bit less spectacular. Sugar stocks are now 35 percent of world trade, but the chart does show you what happens once stocks begin to come down a little bit. At least the sugar price has risen a little, but it has remained 85 percent below what it was at the beginning of the decade.

Mr. Chairman, ladies and gentlemen, this situation that we've found ourselves in world agriculture reminds me of the story of Dame Nelly Melba, who after a particularly outstanding performance on the stage felt she should be treating herself to something special. She talked to her beau of the day and he decided to give her a champagne bath, and so he got 150 bottles of finest French champagne. He poured them into the bath and in goes Dame Nelly for a magnificent time. He was a pretty commercially oriented kind of fellow, this beau, so when she got out, he ladled all the champagne back into the bottles and got the corks ready to put back in place. Now he had very carefully made sure he marked each bottle right at the point on the neck where the level of the champagne was beforehand and he filled every bottle up to that neck. When he finished filling 150 bottles he found that he had a ladle of liquid left over and suddenly it dawned upon him where the excess supply had come from. Now the moral of that story, ladies and gentlemen, is that a little bit of excess supply devalues all of production, and not just the surplus.

Now, talking about excess supply, if we look at this chart, it shows us the current U.S. and world grain stocks situation in 1985/86 and as we forecast it to be in 1986/87, and then as we forecast it to be through the remainder of the decade. You can see that what we face in the international marketplace is an excess supply of unprecedented proportion.

Partly from the surplus supply problem, we also have absolutely incredible costs being born by our communities at large, as well as our rural communities. As you know, the cost of farm programs in this country have almost reached \$30 billion. That's 15 percent of the federal budget deficit. An additional \$6 billion is being paid by consumers in the United States as a result of artificially administered prices. The Common Agricultural Policy in Europe faces a runaway budget, with \$23 billion being spent this year on payments to farmers or associated with payments to farmers, another \$2 or \$3 billion being spent on surplus disposal and another \$40 billion being spent by consumers in paying artificially maintained prices. These subsidies are equivalent in the United States to \$700 for each nonfarm family in the country and in the EEC to \$900 for each nonfarm family in the Community. In Japan, the direct budget costs are estimated in 1985 to be \$10.5 billion. We've estimated that food prices in Japan are around 60 percent higher than would have been the case had Japanese consumers been allowed to buy their food at prices that had simply moved in line with world prices during the 1980's; that is, without closing the gap.

Now all of those costs may be bearable if they are solving the problem, but they're not. Bankruptcies continue unabated in most countries, farm incomes remain very depressed, and the situation I've indicated at the outset is as bad in the countries with the most developed protective apparatus as it is in other countries. It's also having enormous impact on the nonfarm community. As the BAE (Australian Bureau of Agricultural Economics) has estimated, the EEC alone has lost a million jobs in nonagricultural activity, particularly in manufacturing and services, as a result of agricultural protection. On pages 15 and 16 of the document I distributed, you will find 7 points dealing with the inequities of income distribution being caused by farm policies in our respective countries. You will find another 17 incongruities, absurdities, about the way in which in the European Community for example, butter is now being recycled to calves and fed again to the cows at a price that represents one quarter of the value that was paid for it by the consumers and taxpayers of Europe in preparing it for that fate.

If we look at the future, (you've already seen the chart showing the likely stock situation) I've now put up the chart that shows the outlook for prices. As you can see from that chart grain prices, wheat prices, in this country are forecast to improve. World wheat prices are forecast to improve only very steadily and stocks to decline only very slowly until the end of this decade.

If we look at payments and income for this country you can see that farm income in the United States is not so bad, and this chart shows you why. Farm incomes are made up at the present time of 50 percent government payments, and that situation is projected to worsen a little before it begins to improve only very slowly as the decade draws to a close. So we have indeed a crisis in world agriculture and a crisis that expresses itself within the agricultures of each of the major western nations. Bob Thompson has dealt with the causes of this crisis at some length. It's associated with economic growth. It's got a demand side to it every bit as much as it's got a supply side to it.

The chart that you can see now shows that when world economic growth moves quickly ahead, trade grows quickly. Trade usually grows faster than economic growth when world economic growth is rising. Trade usually

declines at a faster rate than world economic growth. We saw from Bob's address that during the period of the decade of the 1970's, world demand for agricultural products grew very fast, and as you can see from the chart, most of that growth came from the developing countries. Since the 1980's began, there has been very little growth in world trade in agriculture, and it's actually declined once again in 1985. The cause of the crisis that we got ourselves into is that during the 1970's and up until 1980, despite the subsidies in the EEC and Japan, we had world demand growing at a rapid enough rate to keep us all fully occupied in expanding world supply. The rigid policies that are in place in the developed countries have caused the supply situation to keep on expanding while demand growth has stopped and we've had the enormous ballooning of stocks. The heart of the cause of this situation is that the incentive to produce has remained very high despite the fact that the demand for the finished product has diminished substantially. You can see from that chart, U.S. target prices have continued to rise right through this period, only now leveling off, but not beginning to decline, while world prices began to decline early in the 1980's and are still on a precipitous downward trend. The figures for the EEC in that chart show a decline in the U.S. dollar terms during the 1980's, but that in fact is largely a reflection of movements in relative currency values. It's more meaningful to look at the margin between the world prices and the EEC prices. EEC prices have moved somewhat in line with world prices, but at a substantially slower rate and have in fact drifted in the opposite direction towards the end of the period. So at the core of the problem is this incentive to produce exceeding the available markets for the goods due to the fact that administered prices for farm products are simply too high.

In the monograph that I've distributed, I've discussed this issue in terms of what I've defined the price adjustment gap. Mr. Chairman, ladies and gentlemen, that chart shows the situation that has developed here in the United States. As you can see the red line shows what's happened to market prices for agricultural products. This is a chart representing wheat. The blue stepped line at the top shows the U.S. farmer ascending further and further from the ground and further and further into the sky and closer and closer to the clouds while the market moves steadily downward and downward and closer and closer to the ground. Now I come back to the price adjustment gap. The price adjustment gap has been defined as the ratio of the domestic support price to the international market price. If we look at the price adjustment gaps very quickly for a number of commodities, this shows the price adjustment gap for cereals in the United States. It was nonexistent until the early 1980's because target prices were below the market price.

As the 80's have worn on, the price adjustment gaps have widened. For wheat the U.S. price has grown further and further out of line with the international market price. The EEC managed to bring its prices closer to the international market price in the early part of the 1980's, largely as a result of currency changes. But in present times, again it started ballooning away from the international market prices. The market price has fallen further, and of course Japan has the most spectacular story. Japan pays its rice growers some eight times the world market price and so Japan has the distinction of being the country with far and away the largest price adjustment gap and of having elevated its farmers even further into into the clouds than the farmers of other countries, a similarity you can see in relation to sugar. The United States ranks closer to Japan than the EEC does in the case of sugar, so you have the proud situation of having paid your farmers five times the world sugar price at times and still being substantially higher, but at least you edged out the EEC. If we look at butter again, Japan is way ahead of anybody else but following Japan is the

United States with the EEC coming in as third, but only by a neck. The price adjustment gap for beef shows Japan again brought up to the top and the EEC both paying well over twice the market price to their producers for the product, but the United States in the case of beef is only marginally higher than the world market price, reflecting the periodic operation of import quotas.

Now, Mr. Chairman, ladies and gentlemen, I don't pretend that it's possible to close this price adjustment gap over night. It's not and it would not be socially desirable to try and do so, particularly when you look at a country like Japan, where the rural community has been taken so far away from the market but has no reasonable prospect of adjusting quickly. The question we have to ask ourselves is how can we narrow this price adjustment gap over a period so that we can progressively restore international equilibrium. Now, an important point about trying to do that is that it can't be done by one country operating on its own. Without substantial loss of international market share, the burden of adjustment is high relative to the benefits if one country moves by itself, and so we have to try and find some way to have this reform of agriculture undertaken in concert by a number of countries.

At the same time, a multicommodity approach is needed, but it's naive to think governments are going to walk away from their farmers and just start winding back farm incomes. They will want to maintain farm incomes and they will want to slow down the rate at which farmers leave the industry. Governments won't allow the rural communities in all our countries to suddenly be faced with a serious exodus problem. In the paper I've explored all of those goals in different countries that have pursued an agricultural policy and the conclusion is that none of them is efficiently pursued through the maintenance of price and income supports that are directly related to output.

I will quickly run through the ways out of this problem, without being able to give precise prescriptions. The first thing is to recognize that the price adjustment gap is at the core of the problem. The second thing is that we have to switch expenditure on farm programs away from all policies that try to support farm incomes through prices and towards policies that support farm incomes uncoupled from output, and towards policies that assist agriculture. Third is to assist particularly those farmers who are faced with serious income and equity problems.

Now I've dealt [in the report] at length with the nature of the farmer adjustment programs that are operated in my country to deal with this problem, and I believe in this country there is a substantial opportunity available to operate an integrated farm adjustment program as a safety net for those people who are facing most seriously the problem of bankruptcy and loss of equity. In some countries, particularly Japan, developing assistance to agriculture needs to be expedited. In Europe and Japan, the conservation programs that are used in those countries will also need to be strengthened. We'll need to add to the incentives to conserve the rural amenity in Europe because of the serious and genuine concern that all those the small farms that adorn the countryside will be suddenly lost. There is also a case for preservation of the rural amenity in the case of Japan.

In Europe, food security is regarded as a major problem. It hasn't been successfully pursued through price policy and it won't be, but there are policies in the trade and investment areas that will help achieve that objective.

In the area of transitory income support, lump sum payments to farmers can be made in various ways. This seems to be an essential part of a reform package. We do need to have transitory domestic supply controls in place, but as I've pointed out, we need to take great care not to allow those to become a permanent part of the apparatus because they do constitute a tax on farm efficiency. Finally, we do need to quarantine these enormously burdensome stocks and release them onto the market in a reasonable manner consistent with progress made in agricultural policy reform.

Mr. Chairman, because of the time constraints, I won't go through the detail of the process towards an international accord. You will see from my paper that on table 6.1, on page 48, that I've charted the process for determining farm prices in the United States, in Europe, and in Japan during the next 12 months and the political timetables and agendas for elections. I've developed a thesis that there is a window of opportunity in the first 6 months of next year to do something about the farm problem on an international basis and I've also strongly argued that if that opportunity is not taken then we face the situation of running through to 1988, a year of presidential elections, and not a year noted for bravery on the political front. There will be presidential elections in the United States and France, and also parliamentary elections in the United Kingdom. If we miss the opportunity in the first 6 months of next year, then the political imperatives will drive us to an even more difficult situation by 1989, by which time the farmers in the countries most heavily affected will have very serious problems.

Indeed I've also charted the sequence of international meetings during the course of next year on another chart that shows that it is possible through the sequence of international meetings married with the domestic decisions that have to be made in relation to farm prices in each country to go through a process that I've outlined. It is a 6-point process to develop an international accord, to reform our domestic programs and also to negotiate improved trade rules in multilateral trade negotiations.

I do apologize for using more of your time than perhaps I should have, but I do want to make the point to you in concluding that we really do have a crisis in world agriculture. It is going to get lot worse if nothing is done about it. It essentially must be addressed at domestic levels. Domestic policy reform is the key to the solution to the problem that we face. Domestic policy reform has to be undertaken on an international basis. The burden has to be shared with other countries.

The existence of the crisis is well documented in my paper. I hope that those of you who are in the media will take advantage of the opportunity that you are given to dramatize the problem and show the community in this country and internationally and those who lead our rural communities just exactly how serious is the situation we are in.

I want to say that our rural leader not only here, but also in other countries are generally conservative people. They don't like change and they don't like changes in policies, but every soft option adopted by politicians on behalf of the farm community is another crack across the back of rural people in your country, in Europe, and in my country. I think it's time that rural leaders go into the vanguard of change in farm policies and move away from the position of constituting the ballast that holds it back.

I also want to say to those who are responsible for the provision of political and bureaucratic leadership in this country, in Europe and in the United States that there is a wonderful opportunity for anybody with heightened skills to provide genuine leadership to deal with one of the world's most serious problems. There is an opportunity there that will be unsurpassed in your lifetimes and I sincerely hope that you will take advantage of it. Thank you.

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IMPLICATIONS FOR U.S. AGRIBUSINESS STRATEGIES

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at the
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The export-related sectors of agriculture have been severely stressed in recent years. By contrast, segments of U.S. agriculture that are insulated from world markets have generally done much better. This tends to make government help in protecting markets or market gains look attractive to some agribusinesses.

Such yearnings are often buttressed by a lack of control over many of the forces and policies influencing U.S. performance in world markets. The list of such factors is long--the ability of customers to pay; the cost of capital; the value of the dollar; the willingness of centrally-planned countries to import; the trade practices of customers and competitors; and the natural forces of weather, insects and disease.

Export's poor track record in recent years and an inability to control key influences on world markets make reliance on trade seem nearly foolhardy.

But set against these pressures to retreat within secure, protected markets are several considerations. Memories of the opportunities created by events in the 1970's are still strong. The search for demand growth to absorb the production potential unleashed by technology is important. And an awareness of the cyclical nature of agriculture rekindles hopes of better times to come.

In a very basic sense, where agribusinesses come down in this choice between opening or closing markets will set their strategies for the future. Since I have been asked to draw out the implications of current circumstances for U.S. agribusiness strategies, I need to look more closely at the consequences of this choice. What I would like to do is break the matter down into three questions:

- O Should U.S. agribusiness put its faith in princes or markets?
- O Behind all of the cycles and turbulence, is U.S. grain agriculture likely to be competitive over time?
- O And what is likely to happen to the mix of politics and market freedom in U.S. farm policy?

Princes or Markets

At the most basic level, U.S. agribusinesses must decide what kind of world they want to work in. Do they wish to put their faith in princes, that is, in the power of government action to create profit-making opportunities? Or are they willing to put their faith in markets, that is, in the judgment that fundamental economic forces should and ultimately will prevail over policy contrivance?

In recent years, the argument seems to have been running in favor of princes. That argument goes something like this:

Governments everywhere intervene to help their farmers. This has caused surplus production, depressed market prices and displaced U.S. exports. Therefore, the U.S. government must act to protect its producers from subsidized imports and must match competitors' subsidies to recapture lost U.S. markets.

Two other arguments are often added to justify and encourage more governmental management of U.S. agricultural fortunes. One is a national security argument--that certain industries must be preserved or created to ensure American independence. The other is that the existence of surpluses makes government action free or even profitable because of savings on farm program costs, job creation, multiplier effects on economic activity and tax revenues.

It is hard, however, to invite governmental assistance selectively. There seems to be a strong chemistry at work enlarging casual support into lasting dependence on governmental action to create opportunities for U.S. agriculture.

The process begins with the identification of certain problems or goals that would justify some degree of governmental assistance. The scale of that assistance then grows, either by escalating internal demands or to offset foreign escalation. Eventually, the profitability of an entire industry or sector of agriculture depends upon government aid. Once that threshold is crossed, it always seems cheaper to continue that aid than to withdraw it.

This strategy of relying on princes rather than markets has worked reasonably well for a number of industries. In fact, the European Community has shown that it can work pretty well for agriculture as a whole. The costs--to taxpayers or consumers--can be high. But often they are only partially visible or spread out broadly enough to avoid creating organized resistance.

Typically, one way such resistance is avoided is to place the costs on foreign competitors. In other words, an agribusiness strategy built on governmental assistance is usually not trade-creating. To the contrary, it leads towards a balkanization of economic activity.

Agricultural markets shrink from a global to a national scope. The flow of goods across borders is replaced by the flow of capital and technology across borders. So, the agribusinesses choosing to put their faith in princes clearly must plan to do so in the plural. They must plan to build their business a national market at a time rather than by international marketing.

Many U.S. agribusinesses, of course, have this flexibility. They can adjust to a world of insular markets, with facilities producing behind protective walls to serve local needs. That option exists in only a limited way for U.S. farmers. They can seek to have the U.S. market to themselves but only at the risk of giving up foreign markets.

Some are prepared to make that Faustian bargain. They argue that U.S. grain and oilseed exports have fallen 1.8 billion bushels since 1980. They see highly visible markets shrinking. And they are impatient for a quick turnaround rather than the incremental market recovery that is more realistic.

So, what would induce agribusinesses to put their faith in markets rather than princes? There are several considerations.

First, grain-import demand continues to grow in many markets, especially among developing countries. Moreover, this performance has been achieved during a period of generally poor economic performance worldwide, severe ability-to-pay problems in many potentially rapid-growth markets and generally good growing conditions worldwide. More favorable economic conditions and policies should reinforce this growth.

More generally, rising world population and per capita incomes increase world grain use 30-35 million metric tons each year. For the last few years, much of that increased use has been met from local production. This orientation towards heightened self-sufficiency was inherited from the 1970s, when fears of scarcity motivated some countries to reduce their reliance on imports and when escalating U.S. loan levels offered the means to expand domestic food output even at relatively high cost.

Today's falling price support levels and burgeoning stocks remove both the motivation for and the apparent wisdom of self-sufficiency. As a result, in future years more of this regular increase in grain use will be met by imports.

That is an environment in which U.S. agriculture does well. For example, during the 1970s the share of world grain use met by imports rose from 9 to 14 percent. This doubled world grain trade, and the United States captured three-fourths of the increased business.

By contrast, the United States suffers disproportionately when trade stagnates. With world grain trade flat since 1980, the share of world grain use met by imports has fallen to 12 percent, and the United States has absorbed all of the resulting decline in trade.

These swings were unusually large because of some unique events. But on a smaller scale one can expect that exports will continue to experience cyclical ebbs and flows. The recent decline in U.S. exports now seems to be bottoming out, and prospects for renewed export growth in coming years are good. With more appropriate domestic policies, the United States could make more of the opportunities for growth and suffer less from the inevitable slowdowns.

Necessity is another important reason to rely on trade expansion rather than market protection. With production capacity growing at twice the rate of domestic demand, U.S. agriculture must either find a way to serve the growth market abroad or scale back. Under current trends, domestic needs by the end of the century could be met from half of America's cropland. The other half will have to serve foreign markets or go unused.

In other words, the argument for putting faith in markets rather than princes is part necessity, part opportunity. The necessity arises from the fact that serving only a government-assured domestic market would leave vast resources unused. The opportunity is that foreign demand is growing, that the pendulum is poised to swing back towards a greater role for trade and that the U.S. production and marketing system is well-positioned to serve that demand.

Very simply, a fair slice of the opportunities markets offer is worth more than a large slice of what princes can deliver.

U.S. Competitiveness

Of course, it would make little sense for U.S. agriculture--both agribusiness and farmers--to place their confidence in markets, if it could not compete in those markets. America's competitiveness is shaped by both economic and political forces. So, we need to look at U.S. costs relative to the competition. And we need to assess whether relative costs will be permitted to determine trade flows.

On the cost issue, the United States has some compelling advantages. It has good soils, favorable climate and a reliable production history. It can offer buyers a full range of products with confidence. It has highly educated farmers, backstopped by an extensive education system. It has the capacity to move technology from the laboratory to the field as quickly as anyone. Though labor costs can be a disadvantage for some crops, they are not for the major grains and oilseeds.

Buttressing this production system is the most flexible, efficient marketing and handling infrastructure in the world. The United States has single export elevators that can handle export volumes equal to the total annual sales of some of its national competitors. It also has the most efficient price-discovery system. It has the flexibility to offer each buyer the blend of price, quality and service desired. And it has in place the capacity to handle two to three times its current volume of exports, while competitors are straining the limits of their resources.

At last year's Outlook Conference, I reviewed this competitiveness issue in more detail. The key conclusion, however, was that the incremental cost to the United States of putting an additional bushel of grain into export position was lower than for any of our key competitors. That case is probably stronger today than a year ago.

More problematic than the economic balance of advantages is the question of whether economic or political forces will shape trade flows. While we are a little closer to an answer than a year ago, the tough issues in that question still lie ahead.

However, the major agricultural exporters have all acknowledged that these issues need to be addressed in the Uruguay Round of talks. There also is recognition that those talks must deal not only with trade-distorting border measures but also with production-distorting domestic farm policies. That is to say, there is some realism in the approach being advocated.

It is clearly too early to conclude that these efforts will result finally in the ascendancy of economics over politics in world agricultural trade. But the resolve to move in that direction is stronger than before, and the circumstances may be right for change.

Politics and Markets in Farm Policy

The prospects for agricultural trade reform will be shaped importantly by the balance struck over the next few years between political and market pricing in domestic farm programs. This is where the implications for U.S. agribusiness strategies get really interesting, for one simple reason. Among the wide array of factors that impinge on those strategies, domestic farm policies are the most amenable to change initiated in the agricultural community.

In the past, agribusinesses have tended to take domestic policies as given in the formulation of their strategies. That is becoming less the case, for two reasons. One is that the effects of different farm policy choices have become larger and more visible. The other is that six-sevenths of agricultural economic activity now occurs off of farms and ranches, making it more important to consider the effects of policy alternatives beyond the farm gate.

The history of U.S. farm policy for more than 50 years has been to attempt to manage prices in order to achieve certain social and political objectives. For much of that period the aim was to manage prices up. For a relatively brief period in the early 1970s, that thrust was replaced with an effort to manage prices down from scarcity-induced peaks.

Of course, most of the participants in this price-management process would have protested this characterization. If pressed, they might have agreed to have their efforts described as reasonable attempts to stabilize prices, to remove the peaks and valleys.

There is an understandable resistance to the notion that farm policy has certain price objectives. For one thing, it sets off an argument about whether the policy is helping consumers or farmers more. For another, it makes the failures or shortcomings of policy much more evident.

To avoid these traps, let me try to characterize the farm policy options without saying whether the resulting prices would be high or low.

Policy makers must make certain basic choices. One is whether prices should be the same for producers and consumers or be different for each. That is, should there be a one-price or a two-price system?

If a one-price system is chosen, then decision-makers must determine what will set that level. Again, there are two options. Market forces could be permitted to determine prices, or politics can. So, a one-price system can involve either market pricing or political pricing.

If a two-price system is chosen, market forces are at best subordinated. Price levels are set largely by political forces. If farmers get the higher price, the policy could be called producer pricing. If consumers face the higher price, the result could be called consumer pricing.

In this classification scheme, then, there are only four farm policy options (each, of course, could have degrees of impact). The four options are: market pricing; political pricing; producer pricing; and consumer pricing. Market and political pricing are one-price systems. Producer and consumer pricing are two-price systems.

How would U.S. grain policy be described in this terminology? America's grain policy is typically characterized as market-oriented. But, it is not market pricing because it is not really a one-price system. Rather, U.S. policy is the producer pricing-version of a two-price system. Let me explain.

Users of U.S. grain--whether domestic or export--today make their consumption decisions on prices that are lower than those guiding farmers in their planting decisions. Users, in other words, are looking at loan-oriented price levels. Producers, however, are looking at target-price levels in deciding what and how much to plant.

Current U.S. farm policy will not merge into a market pricing strategy until prices in the marketplace rise solidly above target-price levels. But market prices are unlikely to scale those heights soon. Meanwhile, the

political resistance to lowering target prices significantly is large. Consequently, the 1985 Farm Act is likely to be a producer pricing policy for the rest of its term.

Now, why introduce this new vocabulary into the description of farm policy choices? My purpose is twofold. One aim is to take the policy choices out of an emotionally-charged context. For example, so many seem to think that "market-oriented" means "anti-farmer" that it has become a phrase that ends discussion rather than starts it.

The other purpose is to try to be clearer about what the policy choices are. Lowering loan levels may let prices fall in the marketplace. It is not, however, market forces that are driving prices down. Rather, prices keep falling because they are not influencing planting decisions. Farmers are planting to capture target-price benefits, not market opportunities.

So, my hope is that these four oversimplified farm policy descriptions will focus the policy debate on the central question: what role does price play.

Looking at these four options, one thing is clear. There are very few advocates of consumer pricing. That is to say, no editorials are coming out to endorse the idea that consumers should pay higher prices than producers receive. That is an all-too-common practice in developing countries, however. There, domestic agriculture is held down by government taxation to finance non-agricultural development. But we need not worry about that mistake being made here.

The farm policy debate in the United States is really among three options: producer pricing (reflected in the view that we should "stay the course" with current policy, perhaps with some fine tuning); political pricing (embodied in proposals to set prices based on "parity" and to defend them with mandatory production controls); and market pricing (reflected in proposals to decouple income support from commodity pricing). The implications of these three options for agribusiness are strikingly different.

Let's look first at political pricing. This approach is manifested in proposals to set prices high enough to guarantee farmers "fair" incomes. Accompanying such a price regime must be mandatory controls to bring supply into line with demand at those price levels.

Interestingly, one hears less about political pricing strategies today than six months ago. It has become evident to all, including proponents of such schemes, that the loss of export markets, reduced domestic consumption and stimulus to yields triggered by political pricing would require removing half or more of U.S. cropland from production. The degree of "production policing" required by political pricing schemes has made such proposals unattractive to almost everyone.

What has emerged from the political pricing concept, however, is a mandatory production control scheme dressed up as producer pricing. In other words, proponents of high prices now acknowledge that they cannot afford to surrender the export market, so they propose to subsidize export sales with surplus commodities.

What results is a producer pricing model that has U.S. producers and U.S. consumers making their decisions based on politically-set high prices while foreign consumers get to make theirs on the basis of dumping prices. This contrasts with current policy, where U.S. consumers face the same prices as foreign consumers, but producers plant according to politically determined prices.

The mandatory control version of producer pricing in effect attempts to bid farmer allegiance away from voluntary producer pricing by raising prices further to farmers, paid for by higher prices for domestic users. But, if one strips away the "bidding war" aspects of this scheme, the two approaches are fairly similar. Voluntary producer pricing seeks to curb the resulting excessive output by bidding land out of production. Mandatory producer pricing does so by declaring it out of production.

In either case, the implications for U.S. agribusiness strategies are largely the same. Producer pricing leads inevitably to structural surpluses, requiring continued land retirement. Marketing opportunities depend upon government's willingness to block imports and aid exports. Gradually U.S. international competitiveness erodes as a result of underutilizing marketing infrastructure and worsening distortions in factor markets. And, as America's economic ability to compete in world markets deteriorates, its resolve to lower the political impediments to trade flows will wane.

At some point, the costs of producer pricing policies are likely to become unbearable. At that time there is likely to be a sharp adjustment to a different policy tack. That change could well be to a market pricing strategy. Such a change would benefit most agribusinesses. But the costs of waiting and the mounting costs of delaying needed

adjustments are likely to make a "wait and see" strategy unattractive to many agribusinesses. They may choose to exit agriculture rather than wait; the weaker ones may exit involuntarily.

The third policy option is to move now to a market pricing policy. This would have both farmers and consumers making their economic decisions on the basis of market-determined prices. Income support for farmers would be decoupled from commodity prices, which would be freed to reflect supply and demand.

"Decoupling" of income support from commodity prices means making income payments in ways that are production-neutral. At the least, this means that farmers should receive income payments whether or not they produce a particular crop. Decoupling will be more effective if farmers receive a given year's payment regardless of market price levels that year. And, to avoid long-term distortions, decoupling means that the payment is phased down or out over a suitable transition period according to a fixed schedule that farmers can count on.

If all of these elements of "decoupling" are included, then market prices will shape farmers' planting decisions immediately. Given current surplus stocks, market prices will be low initially. This will result in market driven acreage reductions; less intensive, more cost-conscious cropping practices; and acreage shifts to more remunerative uses. The combined effects of all of these adjustments will be a return to supply/demand balance relatively quickly and maintenance of that balance over time. Unfortunately, neither is foreseeable under a continuation of producer pricing.

In other words, the best hope for a quick return to sustained profitability in U.S. agriculture is to abandon producer pricing in favor of market pricing. The key to that hope is a workable means for decoupling farmer income support from its current basis in commodity prices. Such change is unlikely, however, without agribusinesses becoming more active in policy formation.

So, the most basic implication of current circumstances for U.S. agribusiness strategies is simply this: get involved in creating a better policy environment.

Thank you.

ANNUAL AGRICULTURAL OUTLOOK CONFERENCE

United States Department of Agriculture
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WORLD PRICE DEVELOPMENT AND AGRICULTURAL POLICY

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I was asked to draw the implications for farmers and public policy of the papers given by Robert L. Thompson and Geoff Miller. As so often happens, I received Thompson's paper only a few days ago and I did not see Miller's at all prior to today (December 2). Thus my remarks today should not be seen primarily as reactions to the two earlier presentations.

It is my sincere hope that the remarkable monograph of 130 pages, The Political Economy of International Agricultural Reform, written by Geoff Miller and summarized today will be read by everyone with an interest in farm policy. It includes some things that are all too uncommon--a great deal of useful information concerning the nature and consequences of agricultural policies of the major industrial nations, a critical assemblage of evidence on the ineffectiveness of those policies in improving the economic lot of farmers combined with wisdom of a high order.

I generally agree with what Thompson said, though I fear that he is unduly optimistic concerning the length of time that will be required to return to the late 1970s level of grain exports. His reference point is somewhat imprecise--let us say 85 to 90 million tons was the level of U.S. grain exports in the late 1970s. This would require an increase in export quantity of about 30 percent from the USDA projected level of 70 million tons for 1986/87. But even if the quantity returns to that level by 1990, how long will it take the value of grain exports to reach the earlier levels? For 1977-79 the average export unit value for wheat, in 1967 prices, was \$62 per ton. It is now no more than \$40 per ton. The same measure for corn for 1977-79 was \$50 per ton compared to about \$30 in recent weeks. Given the large stocks, especially of feed grains, it is going to take several years of continued low world market prices to regain export levels of the late 1970s. And only after stock levels have returned to more reasonable levels can we expect prices of grain to return to their long run trend levels. That could well be as late as 1995 and only then if farm policies are substantially modified.

Thompson makes the point that if grain markets are to reach equilibrium between supply and demand at prices significantly higher than those now

prevailing, it will be necessary to rely heavily upon massive acreage reductions for the next few years. As I point out later, such reliance contributes not one bit to the solution of the long run excess capacity problem while Thompson makes the very valid point that acreage reduction programs erode the competitiveness of our combination of resources. Yet we seem to be committed to such programs and will be as long as target prices are kept at such high levels and deficiency payments require farmers to produce.

It is hardly possible to discuss the probable intermediate run trends affecting agricultural markets without considering the effects of the current agricultural policies of the United States and the European communities and, to a lesser extent, those of Canada and Japan and how these policies may be modified over the next few years. If the policies are modified little if at all, it does not take much prescience to foresee low international market prices for grains through the remainder of this decade at least and perhaps for the first year or two of the next decade.

With no significant change in the 1985 Farm Bill, we will see as low or lower export prices for corn, other feed grains, and for wheat in 1987 and 1988 than in late 1986 and much lower, of course, than for 1985/86. The paid diversion planned for feed grains in 1987, even if it achieves an added 20 percent reduction in acreage and a 15 percent reduction in output (compared to 1986) totaling about 40 million tons, would still leave the U.S. with feed grain stocks of 140-145 million tons in mid-1988. This assumes total feed grain production of 205 million tons, feed use increasing by 5 percent to 140 million tons and other use at 37 million tons (more sugar out of corn) and exports of 55 million tons (compared to the peak of 70 million tons in 1978-80 and an average of 61 million tons for 1977-78 to 1981-82 and 40 million projected for 1986/87). Thus with optimistic assumptions feed grain stocks would be reduced by about 25 million tons with the voluntary diversion of an additional 15 percent over and above the required diversion of some 20 percent. Thus in mid-1988 U.S. feed grain stocks most probably will be larger than the mid-1983 stocks that triggered the enormous PIK program and the second largest on record. But the sad note is that even if feed grain production is reduced by 25 percent from the 1986 level and stocks decline to 115-120 million tons by mid-1988, what will have been gained? The excess production capacity will have been reduced not at all in the United States and the governmental incentives to retain that excess largely remains. Target prices will remain high--through 1991, unless there is a radical revision of the 1985 Farm Bill--and the prospective target prices are such as to encourage further expansion of productive capacity in agriculture. There are only two positive signs, one is the new tax bill which may gradually result in a lower rate of investment in agriculture, if in fact most tax shelters have been eliminated. The other is the freezing of yields and the acreage bases for determining deficiency payments. If farmers believe these regulations are permanent, the intensity of crop cultivation would be determined by market prices not the much higher target prices.

The United States has joined with a number of other countries to press for the inclusion of agriculture in the forthcoming round of GATT

negotiation. This is not the first time we have taken this position. We took it before the Kennedy Round and before the Tokyo Round. I know because I had a modest role in the preparation for each round. A great deal of effort was made to create a U.S. position on agricultural negotiations before the Tokyo Round. Not only were there many meetings in an effort to achieve agreement among the various departments, but there were studies undertaken to project how production, consumption and trade in farm products would be affected by free trade. The results of these studies were leaked by Senator Hubert Humphrey in an effort to embarrass the administration, and I assume that I am one of only a handful of people at this conference who has a copy of the published document. In addition, moderately sophisticated studies were made to project what effects free trade would have upon farm employment and farm income in Japan and the European Community. The decision was made not to publish these studies and only a very few copies of the studies now exist in desk drawers here and there.

Unfortunately, if my memory serves me correctly, we did not go much beyond trying to estimate some of the important consequences of free trade. Agreement on how U.S. farm policy could be accommodated to a liberal trade regime was not reached. Are we better prepared for the new round than for either the Kennedy and Tokyo Rounds? I have no inside knowledge but I am deeply concerned that the answer is in the negative. I have seen nothing in print or heard no rumors or have seen no effort by protectionists to build up opposition to any major concessions that we plan to make in our import trade barriers on such items as sugar, dairy products, beef, peanuts and long staple cotton, or how we are to reduce the production and export expansionary effects of our enormous subsidies for cotton, rice, wheat and feed grains.

The only direct evidence that I have of our lack of preparedness for the new round comes from a recent visit to Argentina where I met a well placed Argentinian who participated in the Punta de Este meeting and the prior meeting at Geneva. He stated categorically that at no time has the U.S. put on the table a paper on how it would approach agricultural negotiations in the new round. Given the U.S. political scene and the many changes that must occur in our domestic farm policies and our trade interventions, I am not surprised that the U.S. has put nothing on the table. But sooner or later the problems must be faced and we must be prepared to indicate quite specifically how we would accommodate to a liberal trade regime for farm products. In particular, I am concerned that Congress has so far displayed little or no interest in tackling the issues that must be resolved if we are to liberalize trade in farm products.

Let me now play the role of devil's advocate or, perhaps, that of an EC negotiator, and summarize some of the changes in policies and policy instruments we would have to make if the GATT negotiations are to result in reducing agricultural trade barriers. We are so used to complaining about the nefarious behavior of others that we largely ignore the numerous features of our positions that are inimical to or inconsistent with a universal liberal trade regime in agriculture.

Since successful GATT negotiations on agriculture would have a major impact upon price developments for farm products, it is important to at least consider what the U.S. must do if there is to be a successful outcome. I have no doubt that there cannot be successful outcome if the U.S. stands pat and makes no significant modifications in its own policies and programs. Sooner or later we must go beyond talking in generalities about how nice it would be if others eliminated their trade distorting interventions. We must bring to the negotiations what we are prepared to do to reduce or eliminate our own interventions that adversely affect other participants in the world market.

I do not see how there can be a prospect for successful negotiations unless the U.S. gives up its 1955 GATT waiver. There is no reason why any country should offer concessions to us as long as the U.S. retains the waiver. At the stroke of a pen the GATT waiver permits the U.S. to withdraw any concession that it has made if imports threaten to interfere with a domestic farm program. We must be willing to submit ourselves to the mild discipline of Article XI. We should, of course, offer the repeal of Section 22 of the AAA of 1933. This amendment is an act of arrogance and intolerance. It states that Congress has the right to abrogate an international agreement whenever it wishes to do so, without prior consultation or negotiations with those adversely affected. But can such an offer be made? Does anyone believe that at this time Congress would approve such an action? One can hope but can one believe?

But returning the GATT waiver and repealing Section 22 doesn't directly address the serious inconsistencies between our farm programs and liberal trade. Compare the following target prices with recent approximate U.S. farm prices, which reflect our export prices of the same commodity:

	Target Price	Farm Price ^a
	(\$/ton)	
Wheat	161	85
Corn	119	60
Rice	262	95
Cotton	1,785	700

^aThe farm prices are approximations of prices that might prevail during the last third of 1986.

The reason the farm prices are said to be approximate is due to the many ways these prices are now being manipulated through marketing loans for rice and cotton and the generic certificate program. The farm prices are more comparable to the target prices than export prices would be. Or compare the U.S. domestic prices of the following products with approximate world market prices (Autumn 1986):

	U.S. Price	World Market Price
	(\$ per ton)	
Butter	3,390 ^a	1,050
Dry Skim Milk	1,176 ^a	700
Raw Sugar	460 ^a	145
Peanuts		
a) Edible uses	669 ^b	
b) Other	165 ^b	165

^aWholesale prices.

^bPrice support levels, farmers' stock basis.

The comparison of target prices with farm prices and support prices with international market prices indicates that current U.S. farm policies are highly protectionistic. True, current prices have been depressed by the efforts to dispose of surplus grain stocks and by unwanted and high cost production of dairy products and sugar in the EC and the United States. But even if one assumes substantial recovery of world market prices as excess grain stocks are removed, the U.S. faces the necessity to reduce the incentives provided to producers if we are to be competitive in world markets on the basis of ability to produce at market prices rather than on the basis of the strength of the U.S. Treasury and the willingness of the U.S. government to subsidize farm products at rates we could not have imagined just five years ago.

As I have noted, the current farm legislation will continue to provide the incentives to farmers to maintain or even increase the amount of excess resources now in farming. Is the EC guilty of the same unwillingness to face reality? Almost, but not quite. The EC has made some progress in two areas where we continue to provide misleading signals to producers. One is sugar. By various modifications of its sugar program over the past few years, sugar production in the EC has been reduced by about 10 percent though an exact estimate is not possible because of yield fluctuations. In the U.S. sugar production has been stable or slightly increasing during the 1980s. But due to the expansion of high fructose corn sugar, our net imports of sugar have declined from 4.5 million metric tons in 1979 to an estimated 1.6 million tons for 1986. If recent trends persist, we could

eliminate sugar imports by 1990 or 1991. The costs of this outcome will be very great, of course, but it seems that no one really cares what the costs may be.

By a variety of changes, the EC has reduced the nominal returns for grain producers for 1986 compared to 1985. The EC wheat intervention price, assuming that the ECU is approximately at par with the dollar, is now below the U.S. target price plus the \$40 per ton that it costs to move wheat from the U.S. farms to Rotterdam. The U.S. target price for 1986 (and 1987) is \$160 per ton. The equivalent Rotterdam price would be \$200 per ton; the EC intervention price for 1986 is \$179 per ton. For feed grains the EC intervention prices are significantly higher than the U.S. corn target price plus the \$25 per ton difference between Rotterdam and the U.S. farm. The target price is \$119 per ton, adding the \$25 per ton, gives a Rotterdam equivalent of about \$144, well below the EC intervention price of \$179.

In these comparisons, I am ignoring the costs to farmers and the output effects of the acreage diversion programs associated with the target prices. But since I hold that our present farm programs do nothing to reduce the excess productive capacity in agriculture, failure to include these costs and effects is of no significance in the long run. We may be contributing to short run improvement in the supply, stocks and price situation. But until there is a concerted effort to inform farmers of the likely long run trend of farm product prices while simultaneously reducing the incentives to allocate resources to agriculture, we will only be prolonging a very unsatisfactory economic climate for farmers in the United States and in many other countries.

The Atmosphere for Agricultural Negotiations

The existence of Section 22 and other reservations in trade agreements that permit the use of quantitative restrictions clearly darken the atmosphere for negotiations. What does Section 22 say? For one thing it says: "No trade agreement or other international agreement heretofore or hereafter entered into by the United States shall be applied in a manner inconsistent with the requirements of this section." The requirements of the section are that the administration impose quantitative restrictions or special fees whenever "any article or articles are being or are practically certain to be imported into the United States under such conditions and in such quantities as to render or tend to render ineffective, materially interfere with" any U.S. farm program or "to reduce substantially the amount of any product" subject to such a program.

The failure of the Kennedy Round to achieve significant results in liberalizing agricultural trade should not have surprised any one. The Trade Expansion Act of 1962, which authorized the U.S. participation in the negotiations, included the following: "Nothing contained in this act shall be construed to affect in any way the provisions of Section 22 of the Agriculture Adjustment Act, or to apply to any import restrictions heretofore or

hereafter imposed under such section." Hardly a good start for trade negotiations, to put it mildly.

It might be argued that if we give up the GATT waiver that it becomes unnecessary to repeal Section 22. This would be the case if we systematically modified our farm programs to make them substantially market-oriented. This would mean not only bringing target prices for grains and cotton near to long run market prices but also reducing price support levels for dairy products, sugar, and peanuts to levels that would not require the use of quantitative import restrictions. It is true that Section 22 is a symptom and not the problem. The problem has two parts--a high level of protection and methods of providing that protection that requires the use of border measures to limit imports or to subsidize exports.

Implications for Farmers and Policy Makers

The prospective demand and supply situation for grains, cotton and dairy products confronts farmers with one of two main alternatives. One is to continue to rely upon governmental programs and annual subsidies in the tens of billions of dollars for the indefinite future. The other is to accept the need for resource adjustment in agriculture--the need to substantially reduce the amount of labor and capital employed in farming.

It is only the second alternative that offers any prospect that U.S. agriculture can once again provide a reasonable return to resources based on prices generated by the market. Is there any chance that the second alternative can be a viable one? What can be said is that we once had the political will to carry out a gradual process of reducing incentives and encouraging the transfer of resources out of agriculture. The process took approximately 15 years--from the late 1950s to the early 1970s. It involved permitting support prices to decline to or below market clearing levels and relying upon direct payments to maintain farm incomes during the transition. But during that period farm per capita incomes of farm people increased from less than 50 percent of the nonfarm average income for the last half of the 1950s to more than 70 percent for 1970-72, prior to the sharp product price increases in 1973. During that period of time farm employment declined by more than 40 percent. The decline in farm employment was nearly halted from 1979 to 1984 when employment declined by just 1.7 percent annually compared to 3.8 percent decline for 1958 to 1972.

The policy implications of the prospective supply and demand situation in the world for the United States seems to me very clear cut. Either we adopt policies that facilitate farmers in their adjustment to these conditions or we continue to ignore the need to adjust, keep incentives to retain resources in agriculture at a high level, and continue to allocate upwards of 3 percent of the federal budget to the costs of farm price and income programs.

Let me hasten to add that devising programs that will facilitate the resource adjustments that will be required if farm resources are to receive

acceptable levels of income from market prices that reflect supply and demand conditions is no easy task. The political problems that arise from the financial difficulties of a significant minority of commercial farmers and our inability to either provide these farmers with the required financial relief or permitting them to be forced off their farms when their liabilities exceed their assets makes an adjustment process difficult to undertake. However, the present approach as embodied in the Agricultural Food Security Act of 1985 is unlikely to save very many more farm operator families than would a policy of benign neglect--of letting nature take its course, so to speak. A small number of additional farm families will survive on the basis of the small fraction of the huge payments that will actually go to farmers in financial difficulty.

There can be no doubt that the next few years will be one of great difficulty for farmers, for policy makers and for those who must administer our very imperfect set of farm programs. The problems are enormously difficult and there is little or no agreement concerning what policy changes should be made to make the best out of a very bad current situation.

Let me close by quoting our visitor from Australia. Geoff Miller stated bluntly and succinctly: "Every time the political process chooses a soft option, it is a crack across the back of farmers in the EC, the U.S. and Australia." This is the most apt description of the Food Security Act of 1985 and its consequences that I have heard. In the act the U.S. political process choose the soft option and failed to face the realities of the situation in which our farmers find themselves. The legislation completely ignored the enormous need for adjustment in agriculture. Unless the Act is modified, the required adjustments will be approximately the same in 1991 as in 1985 and farming will be no nearer to being a strong and self reliant sector of our economy than it is today.

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PANEL: WHERE IS U.S. AGRICULTURE HEADED?

Moderator

Peter C. Myers, Deputy Secretary of Agriculture

Panel Members

Honorable Rudy Boschwitz, Senator from Minnesota

Richard Crowder, Vice President of Strategic Planning,
The Pillsbury Company

Sonja Hillgren, Farm Editor, United Press International

Ross Korves, Economist and Chief Policy Analyst
American Farm Bureau Federation

John Schnittker, President, Schnittker Associates

OPENING STATEMENTS

RICHARD CROWDER

Thank you Mr. Deputy Secretary. Let me begin by saying that I think that several very common themes arise out of what we have just heard this afternoon and this morning. If those of us who had been on the panel got together to write farm policy, it would take about 15 minutes to do it based on what I have heard. Let me reiterate the themes that have run through the presentation and then talk a little bit about the implications.

First, there is a supply-demand balance problem that exists both in the United States and worldwide. It is a global problem that will not be solved in isolation. Part of this problem is due to overincentives to produce. Producers have been responding to false signals sent from the government and not from the marketplace. Consequently, there are excess resources in agriculture, land, labor and capital. One question was

addressed to Robbin Johnson earlier about capital, the infrastructure of the U.S. distribution system. Part of that is now an excess capacity, and I know in our own case we have had to make some major adjustments in our elevator and transportation systems.

Second, there are two alternatives that we can follow: a government alternative and a market alternative. And finally, the political problems of adjustments are huge and if we are going to make the right choice, to use Gale Johnson's terms, it is going to have to be the hard choice.

The imbalance that we have in the farm sector is basically due to the support programs that have encouraged production, discouraged consumption and signaled production on the basis of government programs. The results have been, as I have indicated, excessive resources and excessively high program costs in the United States and elsewhere as governments have attempted to maintain market share. And yes, there is a trade war or a trade battle going on out there. In any commodity item where there is excess capacity or even in a consumer package item where there is excess capacity there is always a share battle and that is what we are seeing right now.

I think the policy issue is three-fold and we have to look at it from a three-dimensional standpoint. One is farm income. This reflects the supply-demand in balance that we have, particularly with the excess resources in agriculture. Second, there is a budget issue. We can no longer ignore the political consequences of the budget, particularly given Gramm-Rudman and other budget considerations. Finally, we have, and I think that we cannot ignore it, the trade issue. My concern here is that if we deal with trade issue only from the agricultural side it will spill over into nonagricultural areas and that is something that we can ill afford.

As we look at putting policy together, I think that there are basically three objectives that I would put pretty high up on the list. One is, do not give up our world markets. I think we should avoid the Harkin type bill, in which price supports are raised way above the world markets and we give up those markets. I think we should take advantage of our competitive position. Second, we want efficient employment of our resources to maintain our competitive position. This means producing according to market signals and not government signals. And finally, I think that we should have as an objective to remove the excess resources from agriculture at the lowest possible social cost. This means transition programs. It means in the case of specialty crops such as Robbin Johnson discussed that there will not be transition programs, but we have gotten ourselves into this and the social cost what we will have to get out of.

Regarding program alternatives, I think that the supply control approach is wrong. It's wrong from an income standpoint for both the farm sector and from the supporting and supplying industries. It's wrong from a trade standpoint, it's wrong from a budget standpoint, it's wrong from a consumer standpoint. Income is the number one issue in most farm bills and I think that we need to separate the income issue from the resource allocation issue; this gets back to Robbin Johnson's decoupling. However, I think that in doing this we have to recognize that we can not have two sets of rules and I agree fully with Gale Johnson that in items where we have a set of rules that we want to apply with respect to trade and ones that will apply with other commodities such as sugar that we are being inconsistent and that's not the way it should go.

Finally, I think we cannot ignore the trade and budget issues. Budget issues can be perceived or they can be absolute and they also have to be looked at in terms of the social cost. The sugar program, for example, does not get a lot of attention now because there is not a lot of budget cost although the consumer is paying an enormously large price for this program. Finally, as I mentioned, we can not ignore the trade issue.

In conclusion let me make a couple of points. One, a long-term supply-demand balance problem exists. A politically mandated supply control procedure is not the answer. New programs should seek to let the market forces operate to signal the adjustments in supply and demand. We do need to decouple the public policy goals of supporting farm incomes from the public policy goals for farm production and stocks. And finally, from a commercial operation standpoint, is very difficult with us to deal with adjustments in the marketplace that have been brought about by changes in policy versus change in supply-demand forces. It is much easier for us to deal with uncertainties that stem from weather, that's stem from supply-demand forces, that come from the operation of the normal market than it is to deal with those changes that come from policy. With that I'll stop and wait for questions.

SONJA HILLGREN

When I listen to economists I can't decide really if I should laugh or if I should cry. Excess resources are faces; they are people with hopes and dreams. They are people who have had their farms for a hundred years, for two hundred years, they want to raise their children, they are people who live in rural America and these are the excess resources we are talking about.

In the 50's and 60's when we downsided agriculture there where some different economic conditions. The U.S. economy was growing, we were more important in world trade, we didn't worry about Japanese imports and there were lots of jobs for farmers to go to if they left the farm and went to the city. There was less bank debt at the time, agriculture had not expanded with the help of hundreds of billions of dollars and so you didn't have as much of an economic ripple affect throughout rural America.

I come from the state of South Dakota, which Peter Myers did not tell you, and my state of South Dakota just might go back to being Great American Desert; not my town of Souix Falls, where I grew up, but there are a lot of areas of this country that are going to be in very, very deep trouble when we have this downsizing in agriculture.

I think that it is also interesting that Senator Pat Layhe of Vermont is going to become the Chairman of the Senate Agriculture Committee. Pat Layhe has these kinds of pressures in the state of Vermont. In addition to that state's dairy farmers, there are an awful lot of people who live in rural Vermont who are concerned about the quality of life and are very worried about what has happened to agriculture, which is their economic base, what has happened to the agribusinesses, what has happened to that plant where the farmer or his wife went to get a job to have a little bit of extra income.

I think we are going to have some people dusting off some of that woolly-headed stuff that came from the Carter Administration. Somebody is going to be dusting off the Structure of Agriculture report and believe it or not, the Reagan Administration has gotten very interested in that, too. Allen Tracy, who was just here, is working with Kathleen Lawrence on a rural task force. They are looking at the whole of Rural America and how it relates to the rest of the Country. Allen Tracy told me he thinks there's going to be a lot more discussion about it.

It's interesting that as we talk, Successful Farming magazine is holding a conference in Des Moines to show farmers how to diversify, getting them to downsize a little bit themselves so that they don't have to downsize as much by leaving the farm. There are a lot of interesting marketing ideas out there. In some states, state governments are helping by promoting potato chip factories or breweries or other local industries to help their farmers and use their commodities. In the state of Massachusetts, they even have some money coming from abroad, from RABO Bank, an agricultural cooperative in the Netherlands. There is a lot of creativity out there. We need to think about things other than grains and cotton and sugar and rice for Rural America.

It seems to me that all of this can fit in to a very market-oriented agricultural policy. It really doesn't have to be separate. We can understand that we have to stay competitive. I think that there is a strong argument for helping Rural America to make sure that we do continue to go after these export markets and I think it goes hand and hand with a very socially responsible policy to think about all the people in Rural America.

ROSS KORVES

Thank you, Mr. Deputy Secretary. The only plug I'll make is that I came from Southern Illinois and went to Southern Illinois University. I think that's really the only critical thing that needs to be known about me.

I'm going to talk about a few of the issues that I think are important. Some of them have come up already, some of them have not. I'll try not to duplicate what other people have said. Two of the problems that we have in agriculture are very interrelated. They come as a legacy of the inflation of the 1970's, but we often try to tie the solutions to the two problems together in a way that I don't believe you can. I think they are totally separate.

On the one hand we got used to the high exports of the 1970's that were mostly fueled by the inflationary boom in this country and all around the world. When the boom burst in the early 1980's, our exports went down the tubes.

We are now trying to rebuild, basically dealing with different markets but realizing that the export market is an integral part of U.S. agriculture. We are doing a lot of things, we are talking about middle-income developing countries; we are dealing with the issues that Dr. Johnson pointed out--do you worry about volume or price, how do you start out? We have to address these issues and we have to reverse the declines of the last five or six years.

Now, a lot of people make the assumption that if we deal with the export market we will then deal with our second legacy of the 1970's: our relatively high debt load in agriculture, particularly with that third of commercial farmers that holds two-thirds of the debt. Now the bottom line is that whatever happens in the export market, it is not going to help those people with the greatest stake in agriculture. There isn't any \$3.50 corn, regardless of what happens in terms of export volume. So you have deal with the debt problems within agriculture separately from the volume of output and the volume of exports. From the period of the 1970's, we developed a set of price expectations that are totally unrealistic in the 1980's.

Probably about 35 to 40 percent of the debt that held by commercial farmers is in some degree of trouble and we are going to have to work with that debt load one way or the other, and separately from the rest of farm program policy. We're not going to somehow inflate farm income through any type of government policy that is going to deal with the debt issue. If we deal with those two thing separately, then I think we can work our way through most of our problems over time.

We heard some comments this afternoon about restructuring within agriculture and very quickly a question came up, "Does that mean we are going to do away with the family farm?" My opinion is that the whole restructuring of agriculture issue has been tremendously overplayed and everybody has their own opinion about what restructuring is. When you talk about restructuring you assume that you are going from something that you used to have to something totally different that you are going to have in the future. If you look at what has happened on the export side, I don't see that we have done a lot of restructuring because of the decline in exports over the last five or six years. We basically use government price and income support programs to mitigate the restructuring that could accrue from the export side. We are seeing restructuring as it relates to the debt load problem, but that is not restructuring in a sense that somehow big corporate farms are more efficient than smaller family farms. We are going through restructuring as a result of debt load that is out of line with earning capacity but that type of restructuring is totally separate from going to large corporate farms.

My guess is that four or five years from now we are going to be surprised at how little agriculture has changed rather than how much it has changed, and I think the process of changing that we are going through is going to make us more efficient down the line, helping us to be price-competitive in the 1990's. In some of the earlier conversations the discussion revolved around not that everything is going to be okay, but that somehow some combination of price and volume is going to make us survive. I think the efficiency that we are now developing, the lower input costs and things like that, are going to work to our advantage.

We hear a lot about technology, and biotechnology and how that is going to save us in the 1990's. I believe that is true, but my greatest fear is that we're going to push technology too quickly into agriculture. When you push technology in very quickly you raise production sharply but consumption doesn't necessary follow that same pattern. So while we have to look to technology to help us solve some of our problems, we should not get carried away and force-feed new biotechnology into agriculture at such a rapid rate that the consumption side can not deal with it. If we do that, we are simply going to make our current supply-demand balance problems more complicated down the road.

SENATOR RUDY BOSCHWITZ

Thank you very much, Peter; and I am sorry to be a little bit late. I hear the speakers telling you that one is from Southern Illinois and went to a University down there, one is from South Dakota and went to the University in Missouri. I'm from New York and I went to New York University and really knew nothing about farming until I got to Minnesota. Still in many ways I'm a novice at it, although I understand the numbers pretty well and I think that I've been able to import some help into the Agriculture Committee.

I think that when Sonja talks about excess resources and talks about the families who have been there for a 100 years or three or four generations, they are probably not the families who are in trouble out there, and I'm not quite sure what that has to do with the problem. That South Dakota is going to become the American Desert; I think is just a little dramatic, and it doesn't deal with realism, with all due respect.

However, I do agree with Sonja's opening remarks about the economist and not knowing whether to laugh and cry. I don't look at it quite that way, but I remember the story that [former USDA Assistant Secretary Bill] Leshner told me. We came into the Department here in December 1980, take a look around to see what was new about the office, and there on his desk was a study that Howard Hjort put together. It said that the problem in American Agriculture wasn't a matter of production but rather of consumption and asked how we were going to produce enough. Everybody accepted that in December 1980, and I suppose I did, too. I had recently arrived here and didn't have much of a sense of agriculture at that point.

In December of 1982, Bill Leshner and company and down here were sitting around try to figure out what to do with the surpluses, and those surpluses were about what they are now. Therefore, economic projections in agriculture are all very nice, but in large have missed the mark, as have most economic projections. I can tell you about some of my investments, for instance in the stock market. I seem to buy when it's high and and sell when it's low, so I'm no different.

The only answer in my judgement is to make American Agriculture as competitive as possible so that it can weather the storm and cope with world realities as we find them, because I feel that over the long run that you really can't fool economic realities and that you may as well

deal with them. You might be able to fool them for about a year or two, whether it's with PIK or something else, but in the long run you simply can't do it and time and again we have seen that economic projections, most particularly in agriculture, have been off the mark. I recall some of the projections of the corn price that was supposed to be current right now that were made during the 1985 Farm Bill considerations. They were not exactly on the mark.

I think the 1985 Farm Bill, despite the fact that it was called a failure by some of my friends in the Congress before it was even put into effect, has some very valuable attributes. For one thing it made us market competitive. Also, I think it did indeed protect farm income, although at great cost. Over the long run I don't think that that cost will be sustainable on the Hill and something has to be done.

That brings us, for the moment, to the Boschwitz-Boren approach. I suppose in the next Congress, considering the makeup of the Senate, it will be the Boren-Boschwitz approach, but that's okay with me as long as we get some of the elements in it passed. I don't think we are going to do very much with Senator Harkin's approach. I once again agree with Sonja that all of agriculture has to be considered and all of agriculture would really be brought to its knees in my judgment if the Harkin approach were adopted. I don't think it will be.

Of the gross national product that comes out of the agricultural sphere, if you define that sphere very broadly, it's almost 20 percent of the total gross national product of the economy. Certainly it's in the mid-teens, even if you look at it a little more narrowly. The value added to part of that--and really gross national product is counted on a value-added basis--the value added on the farm is 2 of those 14 or 15 percent or 20 percent if you want to measure it that way, a relatively small part of it. If in the process of helping that 2 percent you are going to do so at the expense of the other 15 to 18 percent, you are going to bring problems to the whole economy. If we want to create jobs as mentioned by one of the speakers so that the farmers or others can go to those jobs, we can't do it by undermining a substantial part of the economic resources of the Country.

While I think that Senator Harkin has the best intentions, I think that indeed we're not going to establish tariff barriers, we're not going to pass his bill. It only got 36 votes in the last pass. Even the Boschwitz-Boren bill got 42 votes and I have been working on some of other 58. We can be somewhat more optimistic about some elements of policy that I consider to be better policy than the Harkin approach will be adopted in this coming Congress, despite the shift of control.

I'm very much in favor of some of the approaches we took last year. I have not moved away from them. I like the idea of decoupling. I heard some reference to it here earlier on. Decoupling of payments and production may have to be phased in but in the event that you decouple payments and production, but it achieves several things. First, you might be able to back away from set-asides.

This is the only country that restricts production other than Saudi Arabia with oil and you can see what happened to them. Their production rose to 10-1/2 million barrels a day. They saw the way the American farmers set aside or diverted some of their land to raise prices, and thought they could do that with oil. Oil is only produced by a small number of countries and it's just a fungible commodity like most of those we deal with. Very rapidly their production went from 10-1/2 million barrels a day to 1.8 million barrels a day.

I don't want to downsize American agriculture even to the Harkin extent. I certainly don't want to downsize American agriculture with set-asides if I can avoid it, and I think the decoupling is the first step to getting away from set-asides. Only this country in agriculture undertakes to idle land. We support the rest of the world and I think we are foolish for doing so.

Decoupling, I think would be the important first step. Furthermore, I think it could give the farmers hope because under the proposal that we had last year, the payment would be made whether or not the farmer planted and without regard to the price. The farmer's income probably will be protected below the loan rate, but in the event the price rises above the loan rate, the payment would not be reduced. This would offer farmers some hope that when markets rose that they would be able to cash in a little bit.

The Boschwitz-Boren reduced the size of the payment about 5 percent, 6 or 7 percent a year over 6 years, down to 50 percent of its present level. The maximum payment under our bill is not \$50,000 but \$63,000 and it would decline to \$31,500 at the end of 6 years. Everything would be phased down. To do that, we would have to give the farmers some up-side by the decoupling and giving the farmer the benefit of the market in the event that it rises over the loan.

I think that we do indeed, as Sonja said (or perhaps it was Dick or Ross), have to think about all people in Rural America. If you think of all people in Rural America, you have to think of the magnificent infrastructure that we have out there. One of the things that makes

American agriculture so very, very competitive, perhaps the prime thing, is the efficiency of our infrastructure. If we downsize American agriculture as some people recommend, we are also going to downsize our infrastructure, make it far less efficient and in my judgement harm all of Rural America.

I'm by and large an optimist by nature and in that optimism I think we are going to lay on to the Farm Bill of 1985 one or two other good policy provisions and that the Farm Bill of 1985 will, therefore, not only be providing low loan rates but providing some other good policy provisions that return us to the market. As has been said, that means that we don't try to evade economic realities that make us competitive so that we can go on to real achievement in the rural parts of the Country.

JOHN SCHNITTKER

Thank you, Mr. Deputy Secretary. I was embarrassed when I came over here to speak without even a note to learn that Geoff Miller had written a book in preparation for the Outlook Conference! So I sat in the back row and I wrote these brief remarks.

I start from the premise that the 1985 Food Security Act, Senator Boschwitz notwithstanding, has essentially failed. Its failure will dawn on us as we go on in the months ahead unless the Act is materially changed in 1987 or 1988. U.S. and world agriculture are in a sustained crisis. Extraordinary measures are required at least in the U.S. and Europe but none are expected. The U.S. is at another political impasse with an executive trapped in its own rhetoric and trapped by a 1981 Act and by a 1985 Act which were essentially unacceptable, but which the President signed. We are also trapped by a Congress which is long on nostalgia for old-time farm bills but short on ideas for new ones.

What is needed in the U.S. in 1987 is an emergency program including the following: One, a pause in U.S. price cutting in world markets while we engage in worldwide consultations and hand holding and watch to see if we've had any results from the price cutting we have already done. Senator Kassenbaum of Kansas made this sensible proposal a few weeks ago and it ought to be heeded.

Two, we need the phased reduction of production subsidies that others have talked about and which are in the bill, but which start too late and are too small. We need this phased reduction of subsidy payments concurrent with alignment of acreage reduction requirements with the level of deficiency payments that farmers actually get. We can't go on piling up corn and wheat and soybeans and dairy products year after year.

Third, payments should be decoupled from a portion of production. As Senator Boschwitz suggests, this would be a practical complement to the changes that I suggested just a moment ago. But, we cannot do that alone, since decoupling payments from production cannot be relied upon in this farm economy to affect production very much in the short run. And we certainly can't decouple payments from production and do away with whatever acreage controls we have at the same time, or we would simply raise the level of chaos in agricultural markets.

Fourth, we need special attention to special problems so that the problems of perhaps 200,000 farmers who are failing or threatened with failure can no longer be used to justify huge subsidy payments to the 400,000 or so farmers who are not in financial distress. This deals with credit, special credit provisions, and with targeting payments to farmers who in some sense really need them.

Fifth, I wish I could say that multilateral negotiations have a role in all of this but I can't. It would be great if farm policy reform in the U.S. could be coordinated internationally, but there isn't time. We must keep the pressure on, especially on Europe, and on some other countries, but we must not link farm policy reform here to an international timetable. I call this the multilateral trap. I have been caught in it and I wouldn't like the U.S. to get caught in it again.

These five points in my judgement would move us along in 1987 to better times in 1988 and 1989, but we still must wait in my judgement for 1989 when we have a new President, a new Congress and one would hope of the same party so that with a unified Government we can really then adopt an agricultural policy.

Thank you.

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WORLD WHEAT REVIEW AND THE DOMESTIC OUTLOOK

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This year's review of the world's wheat situation features record supplies, a significant increase in utilization and prospects for record high year ending stocks. World wheat prices are currently running at their lowest level since the early 1970's, but 1986/87 trade is expected to increase only modestly. Low prices along with larger supplies are encouraging greater use; however, very little of this increase is dependent on imported grain. World imports are projected to increase only around 2 percent from last year's depressed level.

WORLD WHEAT OUTLOOK

The world's total wheat area in 1986/87 is estimated to be the smallest in nine years. However, this apparently will have little impact on the over-supply situation as the 1986 crop is the second largest on record, reflecting near-record yields. Improving yields may continue to thwart efforts to bring world supplies more in line with demand. As farmers in the major exporting countries reduce area, only the more productive land is left in production, limiting the effect of the cutback in area. In addition, farmers in the developing countries are readily embracing new technologies which, in many cases is pushing yields far above levels realized just a few years ago.

WORLD WHEAT PRODUCTION

Country/Region	1983/84	1984/85	Preliminary 1985/86	Projected 1986/87
		-- Million Tons --		
United States	65.9	70.6	66.0	56.5
Australia	22.0	18.7	16.1	16.0
Argentina	12.8	13.2	8.5	9.6
Canada	26.5	21.2	24.3	31.3
EC-12	63.8	82.9	71.8	71.2
China	81.4	87.8	85.8	89.0
USSR	77.5	68.6	78.1	81.0
India	42.8	45.5	44.2	47.0
Others	96.8	102.8	104.3	112.0
Total	489.5	511.3	499.1	513.6

The answer to the problem of excess supplies, therefore, must lay in large part with stimulating consumption. This is the basis for the new U.S. farm legislation. During the 1970's, world wheat utilization grew at an annual rate of well over 3 percent. Exports expanded sharply as many countries found it both economical and attractive to cover expanding consumption with imports. However, this consumption growth rate may have been too good to be true as the era of the 1980's has seen annual consumption expansion slow. What has changed? A number of factors have contributed to the slower rate in the 1980's. During the early 1980's, U.S. loan rates for wheat increased significantly, and the dollar also strengthened, making imports more expensive. The abundance of easy credit that had supported a number of countries grain buying binges started to shrink. In addition, the new farm policies that were put in place in the 1970's by a number of countries started to bear fruit in the early 1980's, particularly for major importers such as India and China and more recently the USSR.

Recent U.S. policies were designed to turn around the export outlook. The dollar has declined sharply against many countries' currencies. However, it appears that currencies for a number of the developing markets have also declined, minimizing any benefits. More important has been the adjustment in U.S. loan rates for grains. The loan rate for the 1986 wheat crop has been set at an effective level of \$2.30 per bushel, down 37 percent from the 1983 level. USDA has already announced the 1987 loan at \$2.28 per bushel. Export prices have adjusted accordingly. As an example, HRW wheat at the Gulf is currently quoted at around \$105 per ton, compared with \$130 a year ago, and \$153 two years ago. Many people have been critical of the new farm legislation, pointing out that our competitors are meeting or undercutting U.S. prices so what are we, as exporters, gaining. The lower loans for U.S. wheat are a signal to the world's other major exporters that they should not depend on the U.S. holding a high price umbrella over the world wheat market any longer. These lower loans should also encourage wheat users to expand wheat consumption. If the average annual increase in consumption for the balance of the 1980's and into the early 1990's should return to the level of the 1970's, the world's huge wheat stockpiles would be worked down and programs to limit area could be eased.

THE COMPETITION

The 1985 U.S. farm legislation has already started to have some impact on programs and policies of our major competitors. The most dramatic has been lower initial returns from 1986 wheat crops. In addition, some countries have already announced adjustments which could affect future production.

For those who were disappointed in other countries' responses to our new loan rates so far, it must be kept in mind that production decisions on the 1986 crop area were well along by the time the U.S. farm bill was enacted. Consequently, competing producers would likely have had little, if any, opportunity to modify production plans as a result of the new U.S. wheat program. Because of the annual nature of wheat production, any significant adjustments in area or applications of production inputs will likely have to wait for 1987.

For producers in most of these countries, prospects and problems are not much different from those faced by the U.S. farmer. The year ahead will be

characterized by production, price, and market uncertainties regardless of what flag they swear allegiance to. However, despite the similarity of the wheat outlook for most countries, there are some striking differences.

In order to bring these differences into focus, let's take a quick look at the competition starting with Argentina. Argentina is the only major competitor that has witnessed a significant reduction in wheat area in recent years. More attractive returns from oilseeds and coarse grains have encouraged a significant reduction in area devoted to wheat. Area devoted to wheat in 1986 is the smallest since 1980 and represents a 30-percent reduction from the recent 1982 high. This year's projected harvest of 9.6 million tons is up from a year ago's weather impacted-outturn but still well short of the recent record outturn. Reflecting this year's limited export availabilities and large commitments under government-to-government agreements, Argentina recently opened export registrations for only 1 million tons of wheat. Wheat sales are already thought to total in the area of 4 million tons, leaving little of the 1986 crop available for export. Reflecting developments in the world marketplace, Argentina has announced a modest reduction in the 1986 guarantees to producers.

Area devoted to wheat in Australia edged down in 1986 for the third consecutive year. This reflects some shift of wheat area back into grazing as the wheat outlook has deteriorated and livestock outlook improved. The 1986 crop of 16 million tons is below the level of recent years, but Australia can be expected to draw heavily on stocks again if international import demand warrants. Australia enjoyed a record-shattering export year in 1985/86, which may be difficult to duplicate in 1986/87. Last year's major buyer, the USSR, is expected to import less. In addition, Australia is likely to face increased competition in some of its other major markets, such as China and Egypt. Feed wheat sales to traditional U.S. corn markets are expected to again be an important segment of Australia's export picture. Australia, anticipating sharply lower returns from selling the 1986 crop, has announced that the 1986 guaranteed minimum payment would be reduced by 13 percent.

Canadian wheat producers, faced with prospects for lower returns for the 1986 wheat crop expanded area to an all time record. Despite periods of adverse weather, Canadian wheat producers harvested a record crop of 31 million tons. A larger than normal portion of this year's harvest will grade CWRS No. 3 or lower, but given the sheer magnitude of this year's outturn, Canada should have more than enough wheat to satisfy its high-quality markets. The more perplexing problem may be where to find markets for the abundant supplies of lower quality wheat. Canada has recently become more aggressive in the feed wheat market with sales of this type of wheat accounting for around 10 percent of total exports in 1985/86. Sales of low quality or feed wheat may become even more important in 1986/87. In anticipation of markedly lower world prices this marketing year, Canada announced an initial payment of C\$130, down 19 percent from a year ago. Even given the lower initial payment it appears likely that the Wheat Pool may run a deficit in 1986/87, necessitating funding from the Federal government.

The European Community continues as a major force in the world's wheat market. Collectively, wheat production exceeds that of any of the major exporters. Domestic use still overshadows trade as the major end use for wheat. However, shipments to other member states or to third countries continue to be an

extremely important outlet for excess production. The dramatic story surrounding the EC's wheat industry has been the decline in dependence on outside wheat for its milling industry and expansion in trade to countries outside of the EC. This trend has been modified over the past two years as reduced world import demand has resulted in greater use of domestically produced supplies at the expense of imports. In 1986/87, EC wheat exports to third countries are estimated at 14.5 million tons, the lowest in seven years, reflecting in large part reduced sales opportunities to the USSR. Offsetting this, EC wheat imports are likely to continue at last year's record low of 2.6 million. The EC has reacted to lower world wheat prices under the new U.S. farm legislation by sharply increasing export subsidies. Recent wheat sales at around \$63 per ton have necessitated a record subsidy of about US \$130. So far the EC has been generally frustrated in its attempts to reduce program costs by lowering guarantees to grain producers.

WORLD WHEAT AND FLOUR TRADE
July/June Marketing Year

	1984/85	Preliminary 1985/86	Projected 1986/87
	-- Million Tons --		
<u>EXPORTS</u>			
Canada	19.4	16.9	18.0
Argentina	8.0	6.1	4.6
Australia	15.8	16.0	14.5
EC-10	18.5	15.5	14.5
Sub-Total	61.7	54.5	51.6
U.S.	38.1	25.0	28.0
Other	7.1	5.5	7.0
TOTAL	106.9	85.0	86.6
<u>IMPORTS</u>			
EC-12	3.4	2.6	2.6
Mid. East & N. Africa 1/	14.1	11.0	11.1
Egypt	6.6	6.7	7.0
Mexico	.5	.1	.2
India	.2	.1	.1
E. Europe	2.6	3.4	3.3
China	7.4	6.6	7.0
USSR	28.1	15.7	14.0
Other	44.0	38.8	41.3
TOTAL	106.9	85.0	86.6

1/ Algeria, Morocco, Tunisia, Iran, Iraq, and Nigeria.

WORLD IMPORT DEMAND

Despite earlier optimism, world wheat import demand is expected to expand only modestly in 1986/87. Early predictions for a significant increase in world wheat utilization appear to still be true as world wheat consumption will hit a record 507 million tons. However, the portion of this year's consumption that will be covered by imports appears to be falling far short of earlier expectations. Back in May, when USDA made its initial projection for 1986/87

world wheat supply-demand, imports were expected to cover over 18 percent of the world's wheat utilization. Now it seems likely that imports' share will fall short of this level.

Because of their importance in the world wheat market, there is a tendency to focus on the wheat situation in China and the USSR. However, a number of other countries are also meeting more of their 1986/87 wheat needs from domestic supplies than earlier expected. Larger crops have reduced import needs in many cases. For other countries, demand has not expanded as much as expected. It may take some time to accurately gauge the impact of the world's sharply lower wheat prices on consumption trends and import levels. The question many countries are now facing, with imported wheat prices 20 to 30 percent lower, is should they expand wheat imports and consumption, or just transfer the savings on wheat imports to other forms of expenditures. Even with lower prices, many countries are facing difficult import decisions because of scarce foreign exchange and limited credit availability.

Stocks To Rise to Record Levels

Even with the United States holding significant amounts of wheat land out of production for 1986 and many countries reducing prices which should encourage consumption, the 1986/87 marketing year seems to be destined to be another stock builder. It now appears that stocks will climb modestly from the record level at the end of the 1985/86 marketing year. The major exporting countries will continue to carry around 70 percent of the world's wheat stocks.

Wheat Prices Plummet

The lower loan rates for the 1986 U.S. wheat crop and abundant world supplies set the stage for a major restructuring of world wheat prices. As an example, HRW wheat the major U.S. export wheat has been trading at around \$105 per ton. In December 1984, this same wheat was selling for around \$150 per ton. As a matter of record, you would have to go back to the early 1970's to find lower wheat prices. Competition in the world wheat market has become even more intense as reports indicate that recent feed wheat quotes have fallen to close to \$50 per ton, well below quotes for corn.

What Lies Ahead

Some of the uncertainty that hung over the wheat market 12 months ago when the 1985 Outlook Conference convened has been erased, only to be replaced by new uncertainties. New U.S. farm legislation is now in place, and lower wheat prices appear to be a given. However, a major question still to be answered is whether these lower prices will result in an upswing in the rate of growth in world utilization and a slowdown in the growth of production outside of the United States. The bottom line, of course, is what impact will this have on U.S. wheat exports.

There is already some evidence that other wheat-producing countries are reducing their production guarantees to wheat producers. While few have announced reductions as large as here in the United States, this start could be reflected in a more modest rate of production expansion in the years ahead.

The world's response to the price policy changes put in place by the U.S. will depend on how permanent they appear to be. For the new farm legislation to have a long-term positive effect on U.S. exports, both competitors and buyers must believe that the United States is serious about lowering U.S. prices to world levels and serious about increasing our export competitiveness. Without this commitment, the necessary adjustments in production and utilization outside of the U.S. will not take place. We must let the world know that our wheat will continue to be competitive. Part of being a reliable supplier is not only having the quantity available when a buyer needs it but also having it available at a reasonably predictable price.

Overhanging the world wheat market are recent developments in countries such as the USSR, China, India, and Brazil, where production successes have resulted in a significant decline in import demand. Policy changes have contributed to these recent production gains and have resulted in a shift away from dependence on imports. If these countries, along with others, continue their recent policy and production trends the outlook for future growth in world wheat trade would be diminished. But should future growth in consumption outstrip production increases, will these countries again turn to the world marketplace for large wheat imports? One would hope that lower world wheat prices would encourage many countries to expand wheat use even if additional imports are the result.

It is possible that many of those countries that have sharply increased wheat production in recent years and have held down consumption growth will continue to pursue these goals. This would likely guarantee that the world wheat market would continue in an oversupply situation and prices and returns to wheat producers would continue depressed.

As yet there is little indication that lower prices are stimulating wheat utilization around the world, except possibly in the case of early 1986/87 sales of wheat for feed. Much of the growth in world wheat utilization in 1986/87 is due to higher domestic production. Unfortunately in a number of countries, consumers are unable to realize the benefits of lower wheat prices because of import barriers. If lower wheat prices are to work we must work to eliminate these barriers, so wheat users everywhere can benefit from the reduced cost of wheat.

Lower world wheat prices should go far in stimulating import demand. There is ample evidence that in times of rising prices, world wheat utilization falls below long term trends and vice versa, during periods of falling prices consumption normally runs above trend. With the new price levels now in place, utilization should start to accelerate. It stands to reason that with world wheat prices down 20-30 percent, a buyer's dollar goes further; therefore, ceteris paribus, some expansion in wheat utilization and imports is likely. This pickup in demand would represent a permanent increase in trade as countries reach new levels of wheat consumption.

1986/87 Domestic Situation

The harvested area of the 1986 U.S. wheat crop was 60.5 million acres, about 7 percent lower than the previous year and the smallest since 1978. This area, combined with the lowest yield since the 1980 crop, produced a crop of 2,077 million bushels, nearly 350 million below the previous year.

Total supplies (3,992 million bushels) for 1986/87 are the second highest, but with use expected to exceed production for the first time since the 1983 crop, ending stocks on May 31, 1987 are projected to be 1,837 million bushels, down slightly from a year earlier. Domestic use for the 1986/87 season is projected to be 1,130 million bushels, reflecting heavy wheat feeding and a continued upward trend in food use. First quarter wheat feeding continued at the high level of the past four years as early season wheat prices (June-August) were competitive with feed grain prices. With the harvest of a huge feed grain crop and a substantial decline in feed grain prices since mid-August, wheat fed during the balance of the year will likely be minimal.

U.S. wheat exports for the 1986/87 marketing year are projected at 1,025 million bushels, up 12 percent from last year and the first year to year upturn since the record 1981/82 export year. U.S. wheat exports in 1985/86 were the smallest since 1976/77 reflecting the uncompetitiveness of U.S. prices in the world market. Sales under the Export Enhancement Program were a significant part of total export sales in 1985/86, and are expected to continue important in 1986/87. However, sales under this program were not able to offset losses in other markets. Despite lower U.S. export prices in 1986/87, U.S. wheat exporters are finding it extremely difficult to regain markets that were lost over the past 2 seasons as competition for markets among the major sellers continues to be extremely aggressive.

Wheat stocks as of May 31, 1987 are projected at 1,837 million bushels. Wheat stocks in various government programs and the projected disposition of such stocks through the end of the 1986/87 marketing year are shown on the following table.

Program	Quantity (mil. bu.)
---------	---------------------

(Quantities As of 11/1/86)

Farm-Owned Reserve	484.4
Special Producer Storage Loan Program	163.4
CCC-Owned Inventory	859.1
9-Month Regular Loans:	
1985 Crop	187.5
1986 Crop	369.4
Total	2,063.8

Additions

1986 Loan Placements <u>1/</u>	175.0-225.0
--	-------------

Dispositions:

Loan Redemptions <u>2/</u>	25.0-30.0
Certificate Exchanges	300.0-400.0
P.L. 480, Other Use	75.0-100.0
Total As of June 1, 1987	1,838.8-1,758.8

1/ Estimated loan volume from 1986 crop = 575-625 million bushels. 2/ Cash.

The key element of the stocks situation continues to be its composition. Nearly all of the ending stocks for the 1986/87 marketing year will be tied up in some type of government program. A major factor affecting the composition of ending stocks will be the quantity of wheat exchanged with generic commodity certificates. An expanded issuance of generic certificates will

increase wheat exchanges and likely raise the quantity of wheat readily available to the market.

Wheat prices for the 1986/87 season are projected to average between \$2.20-\$2.40 per bushel, the lowest level since the 1977/78 season. Prices during the first five months have averaged \$2.32 per bushel, 8 cents under the announced 1986 loan rate. Wheat prices for the balance of the marketing year are expected to remain essentially flat. Some seasonal adjustment may occur but such adjustments will likely be moderated due to the certificate program.

Since farm prices are averaging below the loan level, the wheat deficiency payment will be the maximum (difference between the target price of \$4.38/bu and the loan level of \$2.40/bu.) of \$1.98 per bushel. This payment will be made to eligible producers after Dec. 1, 1986. Most producers have received an advance payment of \$0.915/bu. The advance payment was paid 60 percent in cash discounted by the 4.3-percent Gramm-Rudman-Hollings deficit-reduction factor and 40 percent in generic certificates. No decision has been made as to what portion of the final deficiency payments will be paid in certificates. The final payments are estimated to total about \$1.9 billion. Total deficiency payments for the 1986 wheat program will be about \$3.5 billion, more than double the amount paid in the previous year.

Program provisions for the 1986 crop featured the first impacts of the Food Security Act of 1985. Although this farm bill was not what the Administration had proposed to correct past farm policies and to provide for an orderly transition to a more market-oriented farm program it promises to make U.S. producers more self-reliant and their products more competitive in the international marketplace. It also begins to break the link between high government price supports and production decisions. The 1986 wheat program provisions are shown in Appendix Table I.

1987 Crop Outlook/Announced Program

Generally, producers planted wheat this fall with good moisture conditions and full knowledge of the 1987 Wheat Program. Excessive moisture in Minnesota, Michigan, and many of the Delta States either delayed fall planting or prevented planting altogether. With the exception of areas where excessive moisture has caused planting delays, prospects at this time point to high yields for the 1987 winter wheat crop. Moisture conditions are also excellent in the spring wheat and durum areas. Wheat plantings for 1987 will be down from the 1986 level of 72.0 million acres by 10 to 15 percent, reflecting the expected high level of participation in the 1987 wheat program. The 1987 Wheat Program provisions basically resemble the 1986 program and are shown in Appendix Table II.

Based on provisions announced for the 1987 wheat program, the following example provides a simple format for determining how the program would operate for a farm with a 100-acre wheat base. The market prices, harvested yield and production estimates in this example do not reflect official USDA projections. Individuals can substitute their own acreages, price projections, yield estimates and variable costs of production to determine how the program might fit their operations. -#- denotes Item number.

Item

1. Target Price (\$/bu)	4.38
2. National Avg. Loan Level (\$/bu)	2.28
3. Acreage Reduction Percentage275
4. Permitted Acreage Percentage (1.0-#3)725
5. Acreage Conservation Reserve (ACR) Percentage (#3/#4)3793
6. Farm Price (\$/bu)	2.28
7. Deficiency Payment Rate (\$/bu)[#1-#8] 1/	2.10
8. Program Payment Yield (bu/ac)	33.0
9. Harvested Yield (bu/ac)	37.0
10. Base Acreage (ac)	100.0
11. Permitted Acreage (#5 x #4)	72.5
12. Harvested Program Acreage (ac)	72.5
13. ACR Requirement (ac) [#12 x #5]	27.5
14. Production (bu)[#12 x #9]	2683
15. Income Factors:	
a. Production Value (\$) [#14 x #6]	6116
b. Deficiency Payment (\$) [#12 x #8 x #7]	5024
c. Total Income (\$) [#15a + #15b]	11140
16. Variable Costs of Production:	
a. Harvested Acreage (\$) [#12 x \$45]	3263
b. Maintenance of ACR (\$) [#13 x \$15]	413
c. Total Variable Costs	3676
17. Net Income (\$) [#15c - #16c]	7464

1/ Deficiency payment rates are determined in two phases. First: Based on difference (\$1.53/bu) between target price (\$4.38/bu) and higher of: (1) Basic loan level (\$2.85/bu) or (2) average farm price during first 5-months (June-October) of marketing year (\$2.25/bu). Payments earned under this phase are limited to \$50,000 per person and would be paid after December 1, 1987. Second: Based on difference (\$0.57/bu) between basic loan level (\$2.85/bu) and higher of (1) announced loan level (\$2.28/bu) or (2) season average farm price (June 1987-May 1988). Payments earned under this phase are not subject to a \$50,000 payment limitation but will be subject to a \$200,000 limitation and would be paid after July 1, 1988.

Food Security Act Provisions for 1988-90

The Food Security Act of 1985 contains specific details of minimum and maximum levels of program provisions that will apply to the 1988-90 crops of wheat. Unless changed by legislation the following provisions are given:

Provision	Crop Year		
	1988	1989	1990
Target Prices (\$/bu) 1/	4.29	4.16	4.00
Loan Level (\$/bu)			
Basic Rate 2/	2.71	2.57	2.44
"Findley" Rate 3/	2.17	2.06	1.95
ARP Percentage 4/	20-30	20-30	20-30
Crop Acreage Base (Crop Yr. Avg.) 5/	83-87	84-88	85-89
Program Payment Yields (Crop Yr. Avg.) 6/	81-85	81-85	81-85

1/ Minimum levels. May also set targets based on variable percentage of ARP reduction or a graduated scale of production.

2/ Not less than 75 to 85 percent of preceding 5-year average of market prices dropping high and low price years, except loan level cannot decline by more than 5 percent from preceding crop. 3/ May adjust "basic" loan level by up to 20 percent to maintain domestic and export markets. 4/ If beginning stocks for any crop year is above 1.0 billion bushels an acreage limitation program (known as ARP) is required within the range shown. 5/ Moving 5-year average of planted and considered planted wheat acreage on the farm. 6/ Based on the average of established program payment yields on the farm during the 1981 through 1985 program years dropping the high and low payment yields.

Other program provisions such as paid land diversion, cross/offsetting compliance, advance payments, certificate program, haying and grazing of ACR and 50/92 CU, Gramm-Rudman-Hollings budget deficit reduction factor and disaster programs may vary each year and will be determined based on factors existing at the time a program decision is made.

Future Legislative Changes

The outlays for all commodity programs during FY 1986 exceeded \$25 billion. During the 1960's and 1970's commodity program outlays averaged about \$4 billion and have averaged over \$13 billion during the 1980's. With the huge deficit, the Congress and the Administration will continue to seek ways of reducing or eliminating the deficit. The Balanced Budget and Emergency Deficit Control Act of 1985 (the Gramm-Rudman-Hollings Act) is the main vehicle under which this objective will be accomplished. As a result, all Government spending will be under review and especially agricultural outlays since they have become so high. The actions taken to trim federal outlays will vary considerably. On the agricultural front the issues and opinions on how to control program costs and improve agriculture's economic situation are broad. Some issues that will likely be debated are:

1. Mandatory Controls.
2. Payment Limitations
3. Marketing Loans
4. Targeting Payments
5. Stay-the-course
6. Unhitching payments from planted acreage and prices.
7. Lowering Target Prices.
8. Limiting acreage on which deficiency payments are paid.

The list of issues will probably be broader, but those listed are likely to be the key elements. The 100th Congress will be faced with tough decisions and only time will show what actions were taken to accomplish the task of lowering the federal deficit and improving the agricultural economy.

Appendix Table I: 1986 Wheat Program Provisions

1. Acreage Reduction Program (ARP) [(% of CAB)] . . . 22.5
2. Paid Land Diversion (PLD) [(% of CAB)] 2.5
3. Optional PLD (% of CAB) 5.0 or 10.0
4. PLD Payments (\$/bu) 1.10/2.00
5. Target Price (\$/bu) 4.38
6. Loan Level (\$/bu) 2.40
7. Advance Payments:
-- 50 percent of \$1.83 estimated deficiency payment (40 percent in generic certificates and 60 percent in cash) -- 100 percent of diversion payments
8. No cross or offsetting compliance requirements.
9. Crop acreage bases (CAB) established by averaging wheat planted and considered planted on the farm during the preceding 5 years (1981-85).
10. Program payment yields were established using the average of the program payment yields on the farm during the 1981-85 program years dropping the high and low yield years. For 1986, the program payment yield on the farm could be no lower than 97 percent of the 1985 program payment yield.
11. Haying and grazing of idled wheat land (ARC) and underplanted permitted wheat acreage (50/92 CU) maintained in conservation uses was permitted at the request of each State ASC Committee.
12. The 50/92 provisions were in effect. This provision permits producers to plant one-half of the farm permitted acreage to wheat and devote the balance to conservation uses. Deficiency payments would be paid on 92 percent of the permitted acreage. In past years, deficiency payments were paid only on acreage actually planted to wheat within the permitted acreage.
13. Contracts signed by program participants were binding and liquidated damages assessed for failure to comply with program requirements.
14. Implementation of the generic certificate program.
15. The sign-up period was March 6, 1986 through April 25, 1986.

Appendix Table II: 1987 Wheat Program Provisions

- | | |
|---|------|
| 1. Acreage Reduction Program (ARP) [% of CAB] . . . | 27.5 |
| 2. Optional Paid Land Diversion (PLD) [% of CAB] | 0 |
| 3. Target Price (\$/bu) | 4.38 |
| 4. Loan Level (\$/bu) | 2.28 |
5. Advance Payments:
 - 40 percent of \$2.10 estimated deficiency payment (50/50 split; cash/certificates)
 6. No offsetting compliance requirements, limited cross compliance requirements will apply. (Condition of eligibility for wheat program benefits on a farm requires that the plantings for harvest of other program crops on the farm cannot exceeds such crop's established crop acreage base.)
 7. Crop acreage bases (CAB) established by averaging wheat planted and considered planted on the farm during the preceding 5 years (1982-86).
 8. Program payment yields are established in same manner as discussed for 1986 program, except yield decline from the 1985 level is limited to 5 percent.
 9. Grazing of idled wheat acreage (ACR) is permitted at request of the State ASC Committees with a designated 5-month nongrazing period. Haying of ACR is not authorized. Haying and grazing of 50/92 CU land is permitted at the request of State ASC Committees (STC). When making this decision, STC's must council with all interested parties.
 10. The 50/92 provisions remain unchanged from the 1986 program.
 11. The upper limits on the farmer-owned reserve quantity will be not more than 17 percent of the estimated domestic and export use (about 350 million bushels) for the 1987/88 marketing year. If reserve quantities exceed the upper limit at the time 1987-crop loans mature, no entry into the reserve will be permitted.
 12. No Grahmm-Rudmann Hollings deficit reduction factor will apply to the 1987 program payments.
 13. Program contracts will be binding at conclusion of sign-up or at the time a producer requests an advance payment.
 14. Unless exempted, any producers who, after December 23, 1985, produce an agricultural commodity on a field which is predominately highly erodible land, or who converts wetland for the production of any agricultural commodity, will be ineligible for any program benefits or payments on all farms in which they have an interest.
 15. Actual harvested yields from the 1987 crops will not be considered in the establishment of 1988 and subsequent years farm program payment yields.
 16. The sign-up period is from October 1, 1986 through March 30, 1987.

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CHANGING DYNAMICS OF WHEAT EXPORT MARKETING

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INTRODUCTION

Lower prices, over production, continued trade friction, sluggish world trade and increasing stocks will continue in the foreseeable future. Governments appear unwilling or unable to come to a consensus on how to deal with the issue on a global scale. Each government is attempting to assist farmers on the income side, while trying to push products into an ever stagnant market. This quagmire has led governments into an ever increasing role of price setting on both the import and export side of the equation, and there is increased government intervention on where to market agricultural products.

Governments move slowly. It appears to me that farmers around the world will see little change in export developments in the near future. The only exception may be further U.S. government policy changes in relation to the export enhancement program and generic certificate issuances. Possible changes in these two programs are not necessarily going to be beneficial to producers.

But the blame cannot be fully grounded on the agricultural policies of governments. The world economic climate has stagnated trade and retarded development. The drive to achieve self-sufficiency in importing nations has been fueled by lower foreign exchange earnings and the need to conserve currency reserves.

Price, the ever dominant factor in trade, has gained much attention due to lower U.S. support levels. Price will continue to be the major component of wheat trade, but it will become less dependent on overall supply and demand considerations. Instead, price in the future will be determined by government action and by continued debate on how to extricate ourselves from current difficulties.

CHANGING EMPHASIS ON WHEAT TRADING

I will not bore you with the recent history that is so familiar to each and every one of you. But you must understand at least the past several years of agricultural trade to appreciate how we have come to be confronted by these current problems.

The components of wheat export marketing have not changed but their relative importance has. Leading changes on the domestic scene include:

- U.S. farm policies designed to actively lower wheat prices;
- Lower prices realized from government actions;
- Use of generic certificates to bring about current and future price reductions; and
- Continued pressure on Congress and the Administration to increase export sales.

From an international wheat marketing perspective the dynamics have also shifted with the focus on the following issues:

- Lower prices to many importers and exporters of wheat;
- These importers and exporters are not necessarily the producers and consumers of wheat;
- Pressure on the marginal exporter in regard to opening and holding markets without large expenditures. (Large expenditures in relation to high domestic prices and lower world prices);
- The possibility of other major exporter governments paying producers' minimum guaranteed prices; and
- Continual efforts to maintain and gain customer loyalty through price and credit activities, as well as quality considerations.

PRICE CONCERNS DOMINATE

The economics of wheat trading have not changed and it can be described in a single word -- price. Price, always the major factor, has gained more prominence since passage of the U.S. farm bill which reduced loan levels by 30 percent this marketing year. Other major and most minor exporters have been able to meet the U.S. price reduction.

Price deserves a great deal of attention because of what has, or more importantly, has not occurred in reaction to price reductions. It is obvious that wheat supplies far exceed effective demand. A price reduction from strictly an economist's point of view was called for. (I realize the extent of the economic difficulties faced by U.S. wheat growers and price reductions have created grave financial difficulties for many. While, I will focus my remarks on international wheat trading, I realize that producers must not be forced to face such drastic price reductions within a single year, and do merit government assistance.)

There is no better way to indicate to the world that an item is in oversupply than to cut the price. Given the lack of will on the part of governments to entice farmers into producing less, price reductions become the only clear, concise, and determined means left available to the U.S. to tell the world too much wheat is being produced.

Producers and/or governments in many nations are suffering due to this price decline. Farmers facing shrinking markets and lower prices are finding it more and more difficult to maintain their operations. Governments are facing budget problems due in part to spending on agricultural programs. The EEC budget, proposed at \$37.9 billion, is 2.8 percent larger than last year's, while a deficit of \$4.2 billion is expected under current conditions. Much of this EEC budget deficit can be attributed to lower grain prices and the decline in the U.S. dollar. Given the current minimum guaranteed prices announced by Australia and Canada, they may be making direct support payments to producers this year. In addition, there are active discussions within both governments on other assistance that may be provided wheat growers. In the U.S. a record spending level for agricultural programs will be reached with about \$30 billion spent to directly assist farmers.

REACTION TO PRICE DECLINES

The world's reaction to price reductions has fallen solely on the U.S. It is important to remember that other players in the world do and have undercut U.S. export prices. Such undercutting is readily apparent in wheat sales to the USSR, China, Brazil, and other markets. There are no white knights in the world wheat trade. The main reason price reduction actions have focused on the U.S. is due to the openness of our pricing system and the announcements of most sale transactions in terms of price and quantity. If others were more open, farmers would have a better reading of the value the world places on the grains they produce. A more open pricing policy by other major exporters would assist in this regard.

So what have lower prices accomplished? It appears the opposite of that expected. World wheat trade continues to stagnate, output is near record levels, and U.S. farmers' situation vis-a-vis the world has changed little. What appears on the surface as economic folly can be explained away by other economic doctrine.

- Lower prices do not increase demand if the power to purchase the product is nonexistent.

Many nations continue to face real economic crises that force limitations on spending hard currencies for imported food grains. Major wheat purchasers in Africa and South America continue to struggle under large debt burdens and stagnant economies. Prices for their exports have also fallen, leaving no additional capital for debt servicing or import purchases. These problems are not going to be solved soon, and the developing world will not be a large player in the international wheat market until they are. The lack of hard currency availability is considered the primary factor in Nigeria's decree to stop the importation of wheat and other agricultural products. It is also often cited as a reason for the sluggishness of Soviet grain purchases so far this season.

- Goods must be free to trade internationally.

Developing nations cannot achieve economic progress unless a

healthy trade environment exists. Tariff and non-tariff barriers to trade should be reduced to assist the economic progress of the developing world and stimulate economic activity in the developed world.

- Continued desire to be self-sufficient, or more self-sufficient by many nations.

Countries see the growing of wheat domestically as conserving needed foreign exchange, as well as providing a measure of food security while building a basic domestic industry.

- The insulation of producers and consumers from price reductions.

Demand cannot be stimulated, or production cut, unless producers and consumers realize price reductions. As long as governments act as price buffers, consumers will not be able to take advantage of lower world prices. But governments will have to face the prospect of low wheat prices over the next several years. We have seen some reaction during this marketing year to price reductions. Marginal exporters such as India and Pakistan are reluctant, or unable, to sell into a world market in the mid-70's price range. Saudi Arabia, a new exporter, is attempting to shift production from wheat to barley. Such action will reduce the export subsidy they provide on wheat, while at the same time reducing their barley imports.

Lower U.S. and world prices have failed to stem the output of wheat in the major exporting nations. This is not surprising in the short time lower realized prices have been evident to producers. But the question remains, will output in the future be stifled by lower prices.

This year we have seen record acreage and a record crop in Canada. Australia and the EEC are certainly going to or have harvested good size crops. The EEC already has in place mechanisms that assure farmers are insulated from lower world prices and thus acreage will not be cut. The U.S. dual system of support prices and acreage reductions is the only concerted government effort in the world to cut plantings. With the distinct possibility of farmers in Canada and Australia receiving guaranteed minimum prices and the current pooling mechanisms will limit any acreage adjustment due to price declines. Pooling arrangements in effect delay the reaction to lower prices and insulates the less efficient producer who may be more efficient at producing something other than wheat.

While lower prices have pressured government treasuries and many producers who carry large debt burdens, less acreage is unlikely to be seeded in the next year. Cushioning price impacts, pooling arrangements, and other factors will limit seeding declines.

- A lower U.S. dollar has not stimulated U.S. sales.

American farmers came to expect, on the advice of economists, that a lower valued U.S. dollar would make them more competitive on the world market. And it has against the Europeans. But the Canadian and Australian dollar have fallen in tandem with that of the U.S. In essence, the dollar decline has not made U.S. wheat more competitive, but it has made it relatively less expensive.

- Improved technology.

Continued improvements in plant genetics and agricultural chemicals and production practices have assisted nations in producing additional agricultural products.

PRICE AND SUPPLY WILL DICTATE FURTHER ACTION

Continued flat export volumes and lower prices will be the catalyst for proposed changes in U.S. farm programs. This is the major unknown in the dynamics of wheat marketing. How will the U.S. Congress and other governments respond to continued price declines? Of course there is the possibility that Congress will legislate price increases, but personally I doubt such policies would be accepted by the majority, let alone the current administration.

If the U.S. government continues to pursue a policy of price reduction, either spending on agriculture will be increased, or income supports will be adjusted. This adjustment can take a number of forms -- from income targeting, to lower target prices, to stricter payment limitations. Given current spending levels, Congress will certainly review the linking of income support and grain output. That is, targeting the "family farm" for survival. The administration and Congress may also be forced to look toward other export programs.

The export enhancement program (EEP) currently has a limited life. Since the program has been successful in moving wheat in several markets, expiration of the program would further reduce sales, causing additional income and storage problems for producers. Loss of the EEP program would substantially cut U.S. wheat export sales. Should the program be allowed to die for lack of funding, agency infighting, or Congressional revision, it would be added to the growing list of short-lived U.S. export policies. Continued policy and program changes only cause confusion among buyers and opportunities for the competition.

The same may be said for generic certificates. Generic certificates have also been a source of spending debate. Although favored by farmers and the trade, certificate issuances must increase dramatically to pull large volume grain going under loan back onto the market place. It appears unlikely that such a large number of certificates will be issued given the current debate between USDA and OMB. What we may see again is the lack of consistent policy undercutting a newly operative program.

The recent past has shown us that the U.S. has little stamina in following export policy. Export programs are created, soon to be dismantled or made ineffective by Congress (i.e. blended credit and the flour sale to Egypt). In addition, many of our export programs are designed for us, not the buyer who is

expected to utilize them. This must change if America is to meet the changing dynamics of the world wheat trade.

This is not to say the 1985 farm bill will be rewritten. What is assured is debate on how farm programs should be restructured, but this in no way implies a restructuring will take place. It is my opinion that things must get worse before Congress will be forced into action. I do expect Congress to try and "fine tune" the current law, but basic philosophies are unlikely to change.

THE INTERNATIONAL MARKET MUST REACT TO U.S. PROGRAM CHANGES

As stated earlier, government programs have overwhelmed economic fundamentals. Thus government actions should be the focus of those who hope to understand the dynamics of wheat trade for the remainder of this decade, and possibly the century. The single most important question is when will governments around the world react to the current difficulties facing agricultural trade.

Supply and demand is not the factor setting prices, government policies are. Governments are taking a greater role in establishing trade pattern through direct intervention in the market place. Where once policy guided trade, trade is now guided by government.

Such changes are viewed with scorn by exporters. But it is a fact of life. As trade declines and farm income falters, politics overwhelms policy. Creeping government intervention is occurring throughout the world. Such action in my opinion is detrimental to both the producer and the exporter yet is certain to continue.

Other exporting nations will match U.S. price declines until major corrective action is taken in the world market. This action may be in the form of a GATT agreement, or a radical move to free market policies. Of course, world economic stimulation or substantial crop failures could save the current trading system. But in the short term, it is evident that the competition will meet and at times undercut U.S. prices. Aggressive marketing and credit financing is the name of the game in today's trading climate.

TRADE TALKS

It is imperative that global discussions to improve the climate of trade proceed quickly. A more open flow of goods and services would go a long way toward improving the global economy and stimulating agricultural trade. The drawback to trade agreements is the length of time it takes to negotiate and implement them. While it is important to agriculture to move forward in the MTN, it is by no means a panacea. Results of talks, should they be successful, will not be realized until the 1990's.

OUTLOOK FOR WORLD WHEAT TRADE

In conclusion, let me outline what I believe farmers and exporters will face in the next several years.

1. The U.S. will continue to utilize the current export enhancement program until the funds for the program are exhausted. Global expansion of the program is unlikely.
2. In 1987 there will be a great deal of discussion on major changes in the current U.S. farm program, with little being accomplished.
3. U.S. wheat exports will be below 1 billion bushels, placing added pressure on Congress and the administration to develop new export initiatives.
4. Generic certificate use will continue, but not at levels needed to reduce corn and wheat stocks sufficiently.
5. U.S. wheat producers are unlikely to see any improvement in the farming sector for the next several years. Stocks will build, prices will remain flat, and marketing will be even more competitive.
6. World wheat production will not decline significantly, and certainly not enough to balance supply and demand.
7. World demand will not expand significantly.
8. Other nations, most notably Canada and Australia will pay direct supports to their producers.
9. Price undercutting, credit availability, and other marketing tools will continue to be employed by all major exporters.
10. The EEC will maintain the CAP and continue to subsidize wheat exports at whatever expense necessary to make sales.
11. The U.S. will continue, to every extent possible, to protect competitor markets while at the same time trying to expand export sales.

Agricultural programs and policies are not always consistent. USDA has done a good job given constraints imposed upon them in administering the EEP and generic certificate programs. It is imperative if exports are to expand that USDA be allowed to be more aggressive in EEP initiatives and be given greater allocations of certificates. The government must also strive to assure other government agencies do not restrain export sales or donations by conflicting with USDA goals and overall export expansion policy.

SUMMARY

We are entering into the last quarter of the 1980's with prices the lowest in the decade, world production reaching record levels, stocks at historic highs, bitter disputes between major exporters, record government payments to U.S. producers and the specter of direct government payments by other nations to their farmers, and paralyzed trade discussions.

Lower prices and tighter government budgets will certainly shake world trade free of these basic problems. Agriculture cannot survive in the long-run without resolution of these issues. But it will take years before a healthy trading climate is again achieved.

Governments, for all their faults, are the only hope to get the world economy moving and to bring supply and demand into equilibrium without additional massive economic upheaval. Yet government action will not be taken this year. Each major exporter must realize the need to adjust the domestic policies to assist in balancing world supply and demand.

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A PERSPECTIVE ON RECENT DEVELOPMENTS IN THE WORLD WHEAT MARKET

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This paper contains a brief perspective on recent developments in the world wheat trade and some comment on the prospects for recovery in world markets. The concentration is on the internationally traded portion of wheat consumption and the policies in major exporting countries, particularly the United States and European Community. While the emphasis in the paper is on wheat, the position in coarse grains markets is similar in many respects.

The genesis of the current accumulation of stocks and associated low prices lies in a fall in world demand for imported wheat and the combined effects of domestic farm policies in the United States and the European Community. However, most wheat producing and consuming countries have some degree of government involvement in domestic markets, with consequent influences on world trading activity. Several, sometimes conflicting, aims underlie the design of grain policies. The drive toward self-sufficiency in food production in countries such as India has involved production subsidies, while in other developing countries, maintaining low and stable consumer prices has been the dominant concern. Policies to achieve the latter aim have frequently been to the disadvantage of domestic producers. Developed country policies are generally more clearly devices for supporting grower incomes at the expense of domestic consumers and taxpayers.

Tyers and Chisholm (1982) suggest that consumers in developing countries would face more unstable domestic food prices in the absence of protective grain policies. However, whatever the domestic price effects of individual countries' grain policies, it is clear (from Johnson 1975 and Zwart and Meilke 1979, for example) that the aggregate effect has been a destabilisation of grain prices in the residual traded market. Also, from the work of Sarris and Freebairn (1983) and the BAE (1985), these domestic policies, particularly in major wheat trading countries, have depressed average prices of internationally traded wheat.

1. Developments in world wheat availability, use and trade

World wheat production and use has doubled since the early 1960s. The growth in consumption is partly accounted for by world population growth; however, even after allowing for this growth, world consumption of wheat per person

has increased by one-third, from an average of 79 kg for the period 1960-61 to 1964-65 to 103 kg for the period from 1980-81 to 1984-85. Until very recently the growth in the use of wheat per person has been fairly consistent. However, reliance on international trade has varied.

The rapid expansion in use in developing countries during the 1970s was closely associated with rising incomes and increasing urbanisation (CIMMYT 1983, 1985). The increase in wheat consumption per person reflected three separate elements: increased total food consumption; the substitution of wheat for coarse grains in diets; and the use of wheat for stock feed. A significant proportion of the expansion in use occurred in tropical countries where insufficient quantities of wheat were grown and in the oil producing Middle East and North African countries.

The growth in these markets more than offset the falling or stabilising demand in other markets, such as Japan, India and Europe. Formerly a growth market in the 1960s, Japan now has stable wheat imports of around 5-6 Mt a year. India, the world's largest wheat importer in some years in the 1960s, is now, through sustained production increases, a small net wheat exporter. And in Europe (west, and more recently, east), rising production and static domestic demand have led to a marked fall in wheat imports in recent years.

The sustained demand from importers in the late 1970s and early 1980s resulted in rising prices in those years. The most rapid import expansion occurred in: the USSR, which needed to import wheat to maintain domestic consumption in the face of a series of poor harvests beginning in 1979-80; China, which used imported wheat to increase domestic consumption until initiatives to increase domestic production became effective; and other developing countries, many of which experienced increased purchasing power as a result of rising oil prices.

The exporting countries responded to these rising prices and net increases in demand by increasing production. In the United States, producers had idle capacity and so were able to increase production almost immediately. Production response in the other exporting countries was slower. In some cases (for example, Australia), it was muted by lower returns in domestic currency (the Australian dollar being high relative to the US dollar at that stage). However, production response by the non-US exporters did eventually occur. And the European Community, in particular, emerged as a major wheat exporter.

In the United States at the beginning of the 1980s, domestic price supports were set in anticipation of further increases in wheat prices and continued rising import demand. Later years, however, saw a stabilising or reversal of import demand in hitherto growing markets. China, having achieved spectacular increases in domestic production, halved wheat imports between 1981-82 and 1984-85. Markets for 6-7 Mt of wheat disappeared. Toward the middle of the 1980s, import demand from the developing countries levelled off as declining oil revenues and rising debts forced a curtailment of import growth. In some cases (for example, Saudi Arabia) investment in agricultural infrastructure has led to spectacular increases in wheat production. Finally, the USSR,

after importing a record 28 Mt of wheat in 1984-85, cut imports by nearly half in 1985-86. This curtailed markets for another 9-11 Mt of wheat.

The current situation (world stocks well over 30 per cent of use and world trade well under 20 per cent) is not unprecedented and bears some resemblance to the wheat market of the late 1960s, when stocks were also high, and trade low, relative to use. In both the late 1960s and the early 1980s, the high value of the US dollar contributed to a reduction in US competitiveness in world markets (see Schuh 1974 and Dwyer 1986).

How did the world climb out of the previous 'wheat glut'? In the late 1960s and early 1970s the world's major wheat exporters - the United States, Canada and Australia - all applied production controls. However, the eventual turnaround in the market (when it came) owed less to deliberate supply adjustment by the exporters than to the intervention of nature and to a fundamental policy change in the USSR. Poor weather simultaneously cut the world wheat, coarse grains and rice harvests in 1972-73 (and again in 1974-75). Increased demand by wheat importers (notably the USSR), including some seeking wheat in lieu of rice (stocks of which had virtually disappeared), led to a depletion of wheat stocks and a tripling of wheat prices. This in turn encouraged increases in wheat production, especially in the United States where there was excess capacity, and wheat prices fell again toward the middle 1970s.

One very clear difference between the earlier period and the current position is the existence of the EC grain policy. While this policy persists, there is one extra, rapidly growing source of potential exports.

2. The current situation

Worldwide, the use of wheat expanded from 90 kg per person in 1975-76 to 104 kg in 1979-80 and 107 kg in 1984-85. World trade increased from 66 Mt in 1975-76 to 86 Mt in 1979-80 and 104 Mt in 1984-85. But, while there was still some growth in trade and use during the early 1980s, it was small. Relative to demand in the immediately preceding period, and to supply growth, demand has been slack during the 1980s. Wheat prices (expressed in US dollars) have indeed fallen, yet exporter stocks have continued to increase, indicating the persistence of a fundamental supply-demand imbalance. This raises two questions: (a) why have exporters' production responses to falling prices been insufficient?; and (b) why have price falls not cleared stocks?

The answer to both these questions lies in two areas: the domestic farm policies of the major grain traders, particularly the US and the EC, and the lagged production response by the non-US exporters and by importers.

In the United States and the European Community, producer prices for wheat have been maintained well above the level sustainable in the international market. This has encouraged too great an increase in resources devoted to grain production, and dampened production adjustment in these two countries. Rising productivity has also acted to partly offset any cuts in area planted to wheat in the United States. In effect, much of the burden of adjustment

avoided by US and EC producers is transferred to producers in those countries which do not, to the same extent, insulate producer prices from world prices - Australia, Canada and Argentina. A further share of the burden has been placed on EC and US taxpayers and EC consumers in the form of stockholding costs, support prices and export subsidy costs.

Production response by non-US exporters which do not subsidise wheat production also has been lagged. The principal reason for this appears to be the different price signals being received by producers in these countries. With the US dollar high with respect to their domestic currencies, wheat returns in domestic currencies have not shown the same fall as they have in US dollar terms.

3. US price support policy

The grain industry provisions of the US farm program are designed primarily as a means of providing income support. The target price is, subject to limits on the total benefit received by any individual, the guaranteed grower price. The US loan rate represents the price at which the US Government's Commodity Credit Corporation will lend to growers. Ultimately the Corporation will accept grain defaulted to it at the loan rate if market prices do not rise above that rate. The loan provisions are designed to provide assistance for farmer's cash management. If the loan rate is set realistically, it will not influence the world market. However, if the loan rate is higher than the price which would clear the market, participating US farmers begin to forfeit grain to the Corporation to pay off loans. The pivotal short term influences on world trade then becomes the US loan rate and stocks rather than fundamental supply and demand factors.

A simple representation of the world market effects, within a season, of US farm policy is given in figures 1 and 2. In figure 1a, the curve SN represents export supply by US farmers who do not participate in the farm program. Export supply by participating farmers is given by qu_2 . So SU, the sum of qu_2 and SN is total US export supply. Export supplies from all other countries are points on SO. World market equilibrium is illustrated in figure 1b, where $ST = SU + SO$ is aggregate export supply and DI_1 , DI_2 and DI_3 represent alternative levels of import demand.

With import demand of the high level given on DI_1 , total world trade would be QT_1 , exchanged at price PI_1 . In figure 1a, a total of qu_1 would be exported by the United States. Of that amount, $qu_1 - qu_2$ would be exports supplied by non-participants in response to the difference ($PI_1 - PL$) between the market price and the loan rate. Other exporters would supply qo_1 .

Provided that import demand remains above DI_2 (in figure 1b), the effect of demand fluctuations is essentially the same for US exporters as it is for other exporters. As import demand declines from DI_1 to DI_2 , US exports decline from qu_1 to qu_2 and other exports decline from qo_1 to qo_2 . Changes in export market shares depend on the relative slopes of SU and SO. But this position changes once import demand falls to a level which will not absorb total world export availability at the US loan rate.

The conditions illustrated in figure 1 with demand DI_1 are those which applied for much of the late 1970s. World demand was more than sufficient to hold prices above US loan rates. In fact, prices were generally above US target prices. In figure 1, the conditions which applied for much of the duration of the provisions of the 1981 farm program are represented when world import demand is DI_3 . Participants in the US farm program become the residual suppliers, exporting only the quantity, qu_3 , which cannot be supplied by other exporters at the loan rate. An amount $QT_2 - QT_3 = qu_2 - qu_3$ is added to US stocks during the period being considered. Exports from other countries reach a floor of qo_2 , with any further change in total import demand being absorbed by changes in US stocks.

Demand remained fairly strong for most of the period for which the provisions of the 1981 farm program applied. However, there was also strong growth in export availability in other major trading countries. Strong growth in demand would have been required for the market to absorb those supplies at the prices set in the bill. Activity in the US market approximated the stock accumulating activity depicted in figure 1 in each year for which the 1981 farm program provisions held.

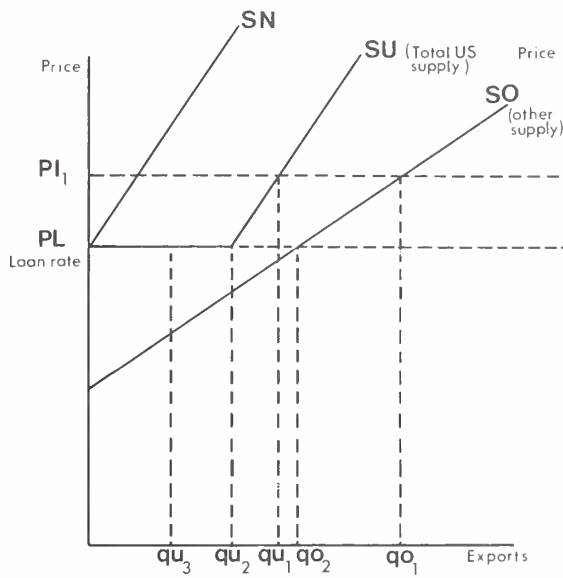
The 1981 US farm program set limits for 1982-85 loan rates at high and rising nominal levels on the expectation that rising demand would maintain market prices above the loan rate. For the reasons outlined in section 1, however, demand growth slowed in the 1980s. This committed the US Government by the mid-1980s to entering the world market as a major buyer of wheat. US exporters, in competition with their own government, were unable to supply wheat at competitive prices. By storing wheat in the early 1980s, the US Government postponed the need for adjustment by all exporters. However, by transferring such adjustment to the future, the severity of the adjustment required in the latter 1980s has increased. Those countries which do not greatly insulate producers from world prices will bear much of the burden of this future adjustment.

A simple extension of the framework used in figure 1 can be used to illustrate the prospects facing US and other exporters from the combined effects of the 1981 US farm program and the fall in import demand for wheat. In figure 2, ST_1 represents the world export supply function with no adjustment in US policy. For a rigid policy-dominated market such as the US grain market, there must be a significant policy change whenever there is a buildup of government stocks. Actions that can be taken are of two types, or some combination of the two. The US Government can either reduce the loan rate, as illustrated in figure 2a, or take measures to reduce production, as illustrated in 2b.

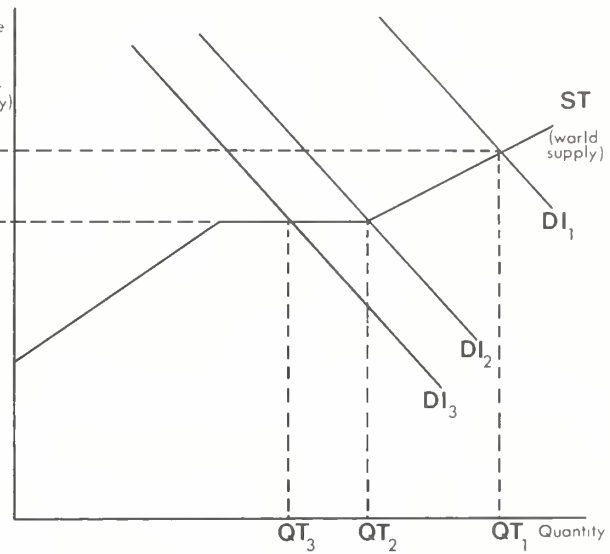
Whether the adjustment to stock buildup is carried out through output or price adjustment has an important bearing on the nature and distribution of the burden of adjustment. If the total adjustment is carried out by restricting US production to a level which will clear stocks without changing prices, as in figure 2b, there is no burden of adjustment for other exporters. If, at the other extreme, the full adjustment is managed by reducing loan rates with no change in US production, as in figure 2a, the

Figure 1: EFFECTS OF US WHEAT POLICY ON WORLD TRADE

1a: US and Other Export Supplies



1b: World Supply and Demand

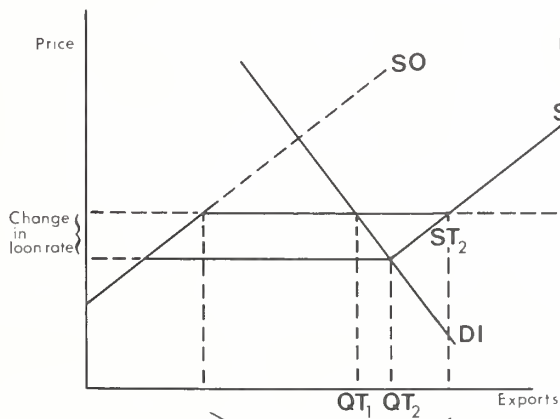


US program
supplies

US stock
buildup (DI_3)

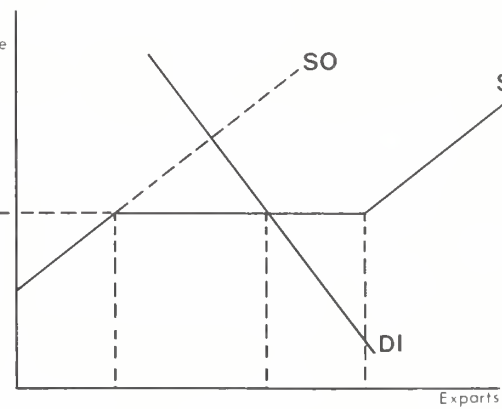
Figure 2: WORLD TRADE AND US POLICY CHANGE

2a: Flexible Loan Rate



Program supplies

2b: Flexible Production Controls



Change in
program
production

total quantity adjustment is borne by other exporters. The price adjustment is shared by non-US exporters and US taxpayers.

Although acreage controls and land diversion are integral parts of the 1985 US farm program, the current position is better illustrated by figure 2a than by 2b. Large cuts in loan rates have been made with no corresponding reduction in support levels. The export enhancement program has acted to bring average prices on export markets below the loan rate equivalent by applying a much lower price to a segment of the market. The loan rate remains the price for the rest of the market. As well, because the real price available on the free market is low and target prices are still high, participation rates can be expected to be maintained at high levels.

4. EC support policies

EC grain support policies are, in some respects, similar in effect to the US farm program provisions. The structure and effect of EC policies are discussed in detail in BAE (1985). Grower and user prices are maintained at levels which have generally been well above world prices. The EC program had its origins in a desire to support farm incomes and to move the Community towards self-sufficiency. EC consumers, by facing prices well above potential import prices, have borne most of the cost of this support. However, as the Community has become an important wheat exporter, direct budgetary support - through export restitutions - has played an increasing role.

As with the US farm program, EC policies have stimulated production to unrealistic levels. There is also little effective quality discrimination in the support price system. The very high prices, and low regard paid to quality, have resulted in the use of crop varieties and production techniques which have produced rapidly increasing quantities of low quality grain.

Maintenance of very high domestic prices has limited the quantity of grain demanded within the Community. Livestock industries have substituted other starch sources, such as manioc, in conjunction with soybean meal and other protein supplements for grain. The effect of the high domestic producer and consumer prices has therefore been to expand output but to reduce domestic use. Greatly increased export availability has been the result. The direct world market effect of the EC grains policy was not nearly as great as it could have been over the early 1980s. EC wheat exports have remained almost constant since 1980-81, despite a rapid growth in production, with the excess production being absorbed into stocks.

Although the Commission of the European Communities has considered the use of production constraints, there is currently no policy limit to growth in EC production. The Community has been reluctant to expand the budgetary cost of using export restitutions to market the increasing production of wheat. However, it has also resisted any downward adjustment of exports in response to recent price declines. Instead, while the unit value of export subsidies has been increased, export volumes have been maintained at around 15-17 Mt and there has been a buildup of stocks.

5. US export market shares

As a proportion of total world trade, US exports fell from an all time high of 49 per cent in 1981-82 to 29 per cent in 1985-86. To put that change in perspective, the average US share of the market over the period 1975-76 to 1980-81 was 44 per cent. The very abrupt decrease in market share from 37 per cent in 1984-85 to 29 per cent in 1985-86 was a consequence of the nature of US farm policy and a rapid fall in import demand. As is illustrated in figure 1, the nature of the US policies guarantees that the United States, rather than other exporters, will be forced to make all of the quantity adjustment once world prices fall to the loan rate.

In some sense, the US price and stockholding policy has the potential to stabilise prices. However, realisation of that potential depends on several factors. First, the periods during which the loan rate acts as a floor price must be limited to those when random demand or supply shocks temporarily depress market clearing prices. Given that export supply and import demand relationships can only be approximated, this means that the policy must be flexible and that the floor price must adapt to changes in market conditions. Further, not only must the floor price be flexible, but the release prices for stocks must bear a realistic relationship to market conditions. Provisions contained in the 1981 farm program were quite inflexible. Both loan rates and stock release prices were set at what turned out to be unrealistically high levels. The result was short term stability at the expense of longer term instability of prices.

The US farm program should not be viewed in isolation from the general macroeconomic environment in which farmers have to operate. Dwyer (1986) has pointed out that the low real interest rates and depreciation of the US dollar which prevailed throughout the 1970s were quite favourable to an export oriented US agriculture. However, the resulting high land values and expanded debt levels made US farmers particularly vulnerable to any change in economic conditions.

US macroeconomic policies in the 1980s have been characterised by tight monetary policy and expansionary fiscal policy. As a result, real interest rates have been high and the US dollar has appreciated. The appreciation of the US dollar against the currencies of other major exporters and many wheat importing countries further increased the level of US support prices relative to market clearing prices. Even in the absence of weakening world import demand, there would have been a fall in demand for US grain. A balanced set of policies would have included loan rates which declined to compensate for at least part of the currency change. However, there was no link between the determination of farm policy and macroeconomic policy.

As was mentioned above, two principal sources of demand growth in the late 1970s were the USSR and China. Given the supplies of wheat available at the time, there was no practical alternative for those countries but to source the additional supplies required from the United States. The wheat embargo imposed by the United States on the USSR after the invasion of Afghanistan in late 1979, however, brought into doubt the reliability of the US as a

supplier. As soon as practicable after this embargo the USSR decreased its dependence on the United States as a source of wheat. In 1985-86 the USSR sourced practically no wheat from the United States.

Political factors have also played a part in the loss of other US markets. A dispute over the admission of Chinese textiles to the US market provided China the opportunity to abrogate a long term contract to buy US wheat. Another large wheat market, formerly supplied solely by the United States but lost through political factors, is Iran.

6. Long term effects of support policies

Because there are many, often conflicting, market interaction policies, it is difficult to generalise the effects of government action on world markets. Of 48 countries considered by CIMMYT (1985) as major producing countries, only five relied wholly on market prices. It is clear from the work of Johnson (1975), Josling (1977) and Zwart and Meilke (1979) that protectionist policies have increased the variability of international prices. However, much less work has been done to determine the long term effects of protectionist policies. The most comprehensive attempts to model the development and effect of government policies have been those by Sarris and Freebairn (1983) and Anderson and Tyers (1981). Sarris and Freebairn concluded that world wheat prices were 11 per cent lower and 35 per cent more variable than they would have been in the absence of intervention. They also concluded that EC policies accounted for 80 per cent and 50 per cent, respectively, of price depression and increased variability.

The base period used for Sarris and Freebairn's simulations was the years 1978-79 and 1979-80. During those years, there was no government financial support of US farmers. Sarris and Freebairn therefore treated the United States as a free trading country. This assumption is likely to have biased their results since it clearly does not hold in the long term. If the analysis were to be repeated for a later period, then the US policies would also obviously be found to have a substantial depressing effect on prices.

The package of land diversion policies which come into play when the US policy is under stress places some limits on the price depressing effect of that policy. However, there are several reasons for believing that the effects of US and EC policies are qualitatively much the same. First, on farm, there is always a strong incentive to retire the worst land first and to ensure that the least production adjustment is made to comply with the program requirements. Second, the support for long run average price received, which is implicit in the existence of the farm program, may be much more important than the short term price support. It is the long term effect which influences the structure of the industry. Even in the base period examined by Sarris and Freebairn the US policy was likely to have had a substantial depressing effect on prices.

The costs of domestic protection policies are spread unevenly between domestic consumers, and sometimes producers of other commodities, taxpayers and producers in non-subsidising exporting countries. Amongst exporters, the

major losers will be Australia, Canada and Argentina. While the presence of the US Government as a major buyer on the world market in the middle 1980s may have benefited other exporters through slightly higher wheat prices, those benefits will be more than offset by additional burdens placed on non-subsidising exporters as the US Government relinquishes stocks through the latter part of the 1980s.

The domestic costs imposed by US and EC policies are also substantial. It is estimated that, for 1986-87, the cost of US farm policies to taxpayers will be in the order of \$35 000m. The direct costs of EC agricultural policies to taxpayers and consumers have been spelled out in BAE (1985). It has also been shown by Stoeckel (1985) that EC farm policies have depressed economic growth and increased unemployment in member countries. There are some differences between US and EC policies for grain in that the whole direct cost of the US program is borne by taxpayers and that the United States uses a variety of indirect production controls in the form of set aside and land diversion schemes. As well, US farm policies have involved only periodic direct support of grain and some other industries. But, as with the EC policy, the US support of export oriented farm production acts as an implicit tax on other exporting sectors of the US economy. Further, agricultural exports and their influence on the domestic economy are proportionally greater in the United States than in the European Community.

A critical element in both EC and US farm programs is the failure to target assistance effectively. The bulk of assistance goes to those firms, or individuals, with the largest farms and greatest production. Despite the enormous cost of the programs there are still rural poor who receive little help. In the longer run the value of assistance is capitalised into land values and so provides no gain to new generations of farmers. In fact it can, as it has in the United States, lead to a whole new set of debt and adjustment problems.

7. Prospects for recovery

Viewed from the perspective of those producers who rely on world prices for their income, the prospects for significant recovery of real wheat prices are poor. For the immediate future, the market is dominated by the large US and EC stocks. The US acreage controls are expected to continue to have a significant dampening effect on wheat production and, with low real market prices, program participation rates will be high. However, there has been no policy response in the European Community. There are moves within the European Community to design policies which will limit future production and stock buildup. But in the short term at least, the Community is likely to continue to contribute around 15-17 Mt a year to world trade.

There are some prospects of a limited recovery in price levels for all grains within the next couple of years. These prospects depend on several factors which will not provide any basis for optimism for the longer term. First, US production of both wheat and coarse grains is expected to decline with the implementation of tighter acreage controls. Second, the stock buildup of coarse grains is expected to be reversed as consumption responds to lower

prices. Finally, production will contract in non-subsidising countries.

While these changes will provide some price increase, they will not change the fundamental structure of the market. The system of production incentives built into the EC program will remain essentially unchanged. Similarly, while US target prices and grower returns remain well above world prices, the possibility of a quite abrupt expansion in US production remains. From the view of an exporting country, there are currently two related problems in world wheat markets. First, there is the obvious short term stock disposal and price problem. Second, there is a long term structural problem caused by the domestic policies of the major trading nations.

The short term problem arises from two distinct sources, support policies, particularly in the United States and the European Community, and a drop in import demand. There may not be a short term solution to the lack of demand growth. The prospects for a rapid expansion in demand depend on the likelihood of rapid economic growth, a strengthening of foreign exchange reserves and a resolution of debt problems in developing countries. Those prospects are not bright. Indirect supply control, through land diversion, is already having some effect in the United States. Were the EC to develop supply controls there would be some further effect. But the short term effect of such controls will be limited unless a substantial proportion of existing stocks is isolated from world markets.

8. Policy options

The structural problems in world markets can be overcome only by moving away from the current support policies. Maintaining existing support levels, as production subsidies, will always lead to excessive production. Not only does the result have a continued depressing effect on world markets but the solution is a poor one from a domestic viewpoint. The costs to domestic consumers and taxpayers and to other traded goods sectors are large. Yet the result is simply to maintain an element of capital grant, in the form of higher land values, to some individuals.

The basic responsibility for policy adjustment lies with those countries that have protectionist domestic policies. While many countries have some degree of intervention, the dominant positions in the world market have been taken by the United States and the European Community. Trading countries which depend on world markets have little choice but to adapt to changes in world market conditions as they occur. However, the degree of instability and the levels of price engendered by intervention mean that those adjustments are likely to be excessive, with serious implications for the economies of those countries and for the world trading environment.

Much of the stated purpose of the 1985 US farm program has been to regain some, or all, of the market share held in the late 1970s. With current demand conditions, this can be done only at the expense of exports from Canada, Argentina and Australia. The basic thrust of the US farm program remains. Income support is still arranged through a set of production related deficiency payments. This means that production decisions have to be guided

through a complex set of acreage controls and land division programs. But there is still a strong incentive for farmers to maintain production by retiring the worst land and by raising yields on existing land. The result is inefficient input use and only limited control over production. The basic adjustments to land values and utilisation which are required to place the industry on a rational footing are severely limited by this set of programs.

There is some agreement within the European Community about the desirability of limiting wheat production and stock buildup. However, there would need to be fundamental changes in the wheat support policy for there to be a substantial positive effect on world trade. Currently the EC wheat policy not only lacks the partial production constraints used in the United States but restricts domestic use through the maintenance of high consumer prices. So policy change needs to be made in recognition of both the production enhancing and demand depressing effects of the existing program.

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ANNUAL AGRICULTURAL OUTLOOK CONFERENCE

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Outlook '87, Session #6

For Release: Wednesday, December 3 , 1986

WHEAT EXPORT MARKETING - A CANADIAN PERSPECTIVE

Peter Fawcett
Foreign Service Officer
Grain Marketing Bureau
External Affairs Canada

The world outlook for wheat is dominated by supplies in excess of demand. This has resulted in a further build-up of stock levels for the sixth consecutive year. The International Wheat Council's view of the world wheat situation and outlook as indicated on this slide is very consistent with the overall situation presented by U.S.D.A.'s Frank Gomme - world wheat trade has declined by 18 per cent in 1985/86 and 1986/87 from the record trade year of 104 million tonnes in 1984/85. Over 60 per cent of this decline is attributed to reduced imports by the Soviet Union with the remainder due to depressed economic conditions in many developing countries. The numbers presented on this slide reflect IWC's October Market Report, having discussed the wheat outlook with the Council late last week, the Market Report to be released December 8th may indicate higher wheat production for 1986/87 and slightly lower world trade due to lower imports by the USSR. You will note from this slide that there is considerable difference between the statistics of IWC and those of USDA with respect to world stocks - However IWC includes nominal level stocks in the USSR, Eastern Europe and China whereas USDA estimates only stock changes in those countries. The IWC has not adjusted the 1981 to 1985 world supply/disposition following the release of official Soviet production estimates, but has included them in world production. A positive sign emerging from all of this gloom is the expected reduction in the level of U.S. and EC carryover at the end of 1986/87. In addition, stocks held by the U.S. as a percentage of stocks held by major exporters will decline by almost 5 percent.

In Canada, wheat production in 1986/87 was a record at just over 31 million tonnes after crops over the last 2 years were sharply reduced by drought. We actually had 2 harvests on the Canadian Prairies this year, one in August and early September and another six weeks later in October as harvest was delayed by wet weather. The delay in harvest and wet weather resulted in some deterioration in the quality of the wheat, but overall quality is better this year than last year. Supplies in the past two years have limited our exports to servicing the minimum requirements of traditional customers. No significant improvement in world demand is forecast during the current crop year. It is expected then that

Canadian wheat exports will be maintained at our traditional market share of about 21 per cent. However, Canadian carryover stocks will increase from the minimum pipeline levels of the last two years. Most of this increase will be held on farms.

I would now like to focus on how this situation will impact on world trade in wheat this crop year and into 1987/88. Because of the large supplies of wheat currently held by exporters and declining prices, importing nations are purchasing only short-term needs, forcing exporters to carry stocks. This has led to instability in the world wheat trading environment, a situation likely to continue for at least the forthcoming year.

The use of government guaranteed credit for export sales has declined due to the attractiveness of cash prices and previously incurred debt load in many developing countries. This slide compares the relative importance of export credit sales in Canada and the United States. The value of American GSM 102 credit sales has declined over the last three years but not as a percentage of total exports. This downward trend in the value of credit wheat sales is expected to continue this year.

It is my view that grade specifications and phytosanitary requirements will continue to gain importance as a factor in marketing wheat. Technological advances and increased health consciousness have supported this development. In this regard, the Canadian Grain Commission has maintained high export grade standards for our wheat, that has established Canada as a supplier of consistent, high quality wheat.

Wheat prices have become the critical marketing factor. Wheat is currently trading at levels ranging from \$U.S. 70 to 125, C and F depending upon grade and type, a 22 per cent decline in average price levels from a year ago. These depressed prices are a result of the current over-supply of wheat (I referred to on the outset) which has been building up over the last six years. Generous price supports to production, particularly in the European Community but also in the USA and, many importing countries have led to this imbalance.

The American response to this situation has been to lower by 27 percent the loan rate that helps to support world prices. Looking back, this sudden drop in the loan rate has not had the desired result of establishing market clearing price levels, because the expected demand response was simply too optimistic. Importing countries delayed purchases until the impact of lower loan rates were reflected in lower prices; lower volume and value of grain exports contributed to the first-ever U.S. agriculture trade deficit for the months of May, June and July 1986.

This problematic price scenario is exacerbated by the export subsidization practices of the European Community and the Export Enhancement Program (EEP) of the United States. A recent sale by the Community of 1 million tonnes of soft wheat to the USSR included an export subsidy of 127.5 ECU's per tonne. The EEP program's initial objectives were in major part presented in an effort to offset EC subsidies and provide for additional American sales in markets where the Community has increased sales with the use of unfair trade practices.

This problematic price scenario is exacerbated by the export subsidization practices of the European Community and the Export Enhancement Program (EEP) of the United States. A recent sale by the Community of 1 million tonnes of soft wheat to the USSR included an export subsidy of 127.5 ECU's per tonne. The EEP program's initial objectives were in major part presented in an effort to offset EC subsidies and provide for additional American sales in markets where the Community has increased sales with the use of unfair trade practices. However, recent EEP initiatives, such as durum wheat for Algeria are difficult to understand on the basis of these objectives given the virtual absence of EC activity on durum in this market. The use of EEP in this market will reduce both U.S. and Canadian export earnings.

If this program can be held to ransom by importing countries threatening to purchase EC wheat in order to qualify for EEP, then the program has the effect of drawing European grain into American markets. An estimated 25 per cent of U.S. wheat exports and 60 per cent of flour exports will be under EEP during the 1986/87 marketing year.

Examples of the irrational state of the world wheat trading environment have been recent sales of soft wheat to Tunisia. The EC sold 200,000 tonnes of wheat at \$U.S. 70 per tonne that carried an export rebate of \$130 per tonne. The United States subsequently sold 100,000 tonnes at \$65 per tonne with the EEP bonus of \$35. If you include the U.S. domestic subsidies, mainly deficiency payments of \$75 per tonne, the total subsidy was \$110 per tonne. Therefore, subsidies are now approaching twice the selling price of wheat.

The agricultural trade war being waged by the U.S. and EC has had a profound price depressing effect, not only in EEP targeted markets but also on world price levels as grain is displaced into other markets. More importantly, world wheat prices are being determined by export subsidy levels rather than by market conditions. We are concerned that this surplus disposal attitude of the EC may proliferate and affect all exports.

Beyond increasing EC export restitutions and the overall cost of the Common Agricultural Policy (CAP), there has been no discernible direct impact on the EC export activity. The growing cost of the CAP may result in pressures for fiscal restraint; however, a large reduction in internal price and production does not appear imminent. At the same time, the government cost of U.S. agriculture has reached unprecedented levels. Other exporting nations have no option but to follow prices down. Canada is heavily dependent on export markets because 80 percent of Canadian wheat production is exported, whereas 50 percent of American wheat is exported and only 20 percent of European wheat is sold outside the Community. We are therefore forced to maintain production or risk losing market share and revenue to producers.

For the next crop year 1987/88, barring major crop failures in an important production area of the world, there is not much optimism regarding an improvement in prices. Today's technological and agronomic advances increasingly reduce the magnitude of such failures. There may be some price improvement in 1988 due to reduced supplies in the U.S. as a result of Acreage Reduction Programs and the long-term Conservation Reserve Stock levels in the U.S., to a great extent, determine world price levels.

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Most forecasts of longer term trend in wheat prices show modest improvement. However, long term demand is difficult to predict, the supply side is easier to quantify.

Developing countries, which account for an increasing proportion of world wheat imports, are continuing to experience economic difficulties. Most economic forecasters predict only modest growth rates in the world economy. Therefore, there are few prospects for increased demand in the medium term. Moreover, further production gains are possible in major importing regions particularly Asia and some observers are suggesting that the USSR will soon make progress towards self-sufficiency in grains.

As yesterday's speakers have suggested, the new round of multilateral trade negotiations under the auspices of the GATT, holds out a real prospect of reversing the deterioration in the world trading environment but results will take time to emerge.

WORLD SUPPLY AND DISPOSITION OF WHEAT

(MILLION TONNES)

	1984/85	1985/86	1986/87
PRODUCTION	517*	506	515
TRADE	104*	85	86
CONSUMPTION	496	496	505
STOCKS	147	157	169

* RECORD

SOURCE: - INTERNATIONAL WHEAT COUNCIL.

CANADIAN SUPPLY AND DISPOSITION OF WHEAT

(MILLION TONNES)

	1984/85	1985/86	1986/87
BEGINNING STOCKS	9.2	7.6	8.5
PRODUCTION	21.2	24.3	31.3
TOTAL SUPPLY	30.4	31.9	39.8
EXPORTS	17.6	17.7	18.5
DOMESTIC USE	5.2	5.7	5.7
ENDING STOCKS	7.6	8.5	15.6

SOURCE: - AGRICULTURE CANADA

USE OF COMMERCIAL CREDIT FOR WHEAT EXPORTS

(PERCENT OF TOTAL WHEAT EXPORTS)

	1983/84	1984/85	1985/86
CANADA	13	13	11
U.S.A.	29	18	29

ANNUAL AGRICULTURAL OUTLOOK CONFERENCE

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Outlook '87, Session #7

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FEED GRAIN SITUATION AND OUTLOOK

DAVID B. HULL

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The year that has passed since the last outlook conference has been full of change important to the outlook for feed grains. Many important developments have related to the enactment of the Food Security Act of 1985. Important changes include:

- o greatly lower price-support loan rates for feed grains and other major crops,
- o issuance of generic commodity certificates,
- o creation of the Conservation Acreage Reserve,
- o a change in the marketing year for corn and sorghum to a September 1 start, from an October 1 start, and
- o announcement of the 1987 Feed Grains Program which includes 20 percent acreage reduction, 15 percent voluntary diversion, unchanged target prices, and lower loan rates.

Other domestic and world conditions have combined with the policy environment to leave the U.S. with record feed grain carryout, the second year in a row of record feed grain yield, and prices lower than they have been in more than a decade.

Although 9 percent below last year's record crop, 1986 feed grain production is still large at 250 million metric tons, despite heavy participation in the feed grain acreage reduction program. The average yield per acre of 2.47 tons marginally exceeds last year's record 2.45 tons. Grain sorghum and barley yields are near year-earlier levels, although oat yields are down 4 percent. Corn yields are expected to average 119.3 bushels per acre, exceeding the 1985 record.

DOMESTIC FEED GRAIN SITUATION

Supplies of feed grains are 14 percent above 1985/86 because of the large harvest and record carryin. Carryin stocks were 126 million tons, compared with about 58 million for the 1985/86 marketing year. Total supply for the current marketing year is now estimated at 377 million tons.

Feed grain disappearance is forecast at 209 million tons, up 3 million from last year. Domestic use is expected to decline marginally, although exports are expected to increase by almost 4 million tons over last marketing year.

Food, seed, and industrial use of feed grains continues to increase about 2 percent per year, as demand for high fructose corn syrup (HFCS) and ethanol continues to rise. Ethanol demand may be starting to stagnate because of lower petroleum prices and perceived quality problems with gasohol, however.

Feed grain carryout is forecast at 168 million metric tons for the 1986/87 marketing year, 33 percent above last year's record. Free stocks are expected to stay below 1985/86 however, as farmer-owned reserve stocks increase 2.5 times their old level and Government-owned stocks rise 60 percent.

Total disappearance of corn for the 1985/86 marketing year was below 6.5 billion bushels, the lowest since 1977. In 1985/86, the record corn crop and low disappearance left a record carryout of 4 billion bushels. This carryout was half a billion bushels more than the previous record set in the fall of 1983.

The 1986 corn crop is an estimated 8.2 billion bushels, roughly equal to 1982's crop, despite a 20-percent acreage reduction requirement and record 85-percent program signup by corn producers.

The generally warm, wet Midwestern weather this fall has spawned concerns about the quality of the 1986 corn and soybean crops. Instances of field-sprouted and moldy corn have been reported. While the quality problems are not thought to be widespread, some of the 1986 crop appears to be at risk, and feed and residual disappearance may rise due to waste.

Price Support Loan Activity

Placements of new-crop corn under price support loan exceeded 800 million bushels by mid-November, 70 percent above loan placements of the 1985 crop by this time last year. This accelerated activity may be the result of several factors. First, more was harvested: the 1986 crop was 63 percent harvested by early November, compared with 57 percent of the 1985 crop. Second, more was eligible: program participation was 85 percent in 1986, compared with 69 percent in 1985. Third, the incentives are stronger: farm prices have fallen further below loan rates this year; for October, the difference between the farm price and loan rate was 53 cents in 1986, compared with 44 cents in 1985.

Finally, generic certificates did not exist last fall. The proliferation, popularity, and profitability of generic commodity certificates may be inducing some quick turnaround in loan placements and certificate exchanges. Redemptions of 1986-crop corn, which include certificate exchanges, are greatly ahead of last year: 71 million bushels through November 12, 1986, compared with only 3 hundred thousand through November 13, 1985.

With the high participation in the 1986 feed grain program, about 6 billion bushels may be eligible to be placed under Government loan. Although loan placements will not likely be this large, they probably will exceed last year's 3.1 billion bushels. As in 1985/86, generic certificates will likely ease tightening of the free supply.

The Role of Certificates

Generic commodity certificates have played an important role in grain markets since last summer. Partial payments of 1986 feed grain and wheat program advance deficiency and diversion payments were made with certificates worth about \$2.32 billion through October 30. An additional \$47 million of generic certificates were issued to U.S. ethanol producers, and \$44.6 million to domestic grain exporters through October. In all, certificate issuances as of October 30 total an estimated \$2.4 billion.

The recently announced advance payments to 1987 program participants are likely to add significantly to this supply. The certificate portion of advance 1987 deficiency payments to corn growers alone could exceed \$1 billion if 1987 signup is as high as 1986, and all participants request the advance. Other payments, such as five-month and final 1986 deficiency payments, could be made with certificates as well.

Reported redemptions of Government-obligated grain and soybeans through November 12 amounted to \$1.4 billion in certificates. Most exchanges have been used to cancel producer loans, rather than purchasing Government-owned commodities (rice is a notable exception with 99 percent of exchanges for Government stocks). Corn has been the most popular commodity for certificate redemptions, accounting for \$819 million, or 57 percent of the total value of redemptions so far. A total of 489 million bushels of corn had been exchanged for certificates through November 12, with 87 percent coming from producer loans.

Supply-Demand Imbalance

With the record carryin and large corn crop, total supply for 1986/87 is an estimated 12.3 billion bushels, 14 percent above the 1982/83 record. However, growth in disappearance will not keep pace with the increase in supply. Feed disappearance of corn is expected to be 4.2 billion bushels, compared with 4.1 billion last year. However, the increase will compensate for declines in feed use of other feed grains and does not represent stronger feed demand.

Feed disappearance for the four feed grains is projected to decline marginally to 134 million metric tons in 1986/87. Wheat feed and residual disappearance was a surprising 10 million tons in June-August, but is likely to decline next year.

Based on price incentives, the quantity of feed grains fed in 1986/87 would be expected to increase sharply. In fact, 1986/87 feed use is expected to be about level with 1985/86. A look at the animal numbers and a closer look at feeding practices explain why.

GCAU's are expected to decline about 1 percent in the 1986/87 feed year. Poultry animal units, which include broilers, chickens, turkeys, and the egg and brood flocks, are expected to increase about 5 percent in 1986/87. However, all other major categories of animal units are expected to decline. Dairy cattle are expected to decline 7 percent, due largely to the Dairy Termination Program. Beef and hog animal units are expected to decline 3 to 4 percent.

Halfway through calendar 1986, cattle inventories were reported at their lowest level since estimates were begun in 1973. The upcoming January 1 Cattle report is likely to show the smallest inventory since the early 1960's. The hog breeding herd was the lowest since estimates were begun in 1964, with farrowing intentions down substantially for the coming year. In addition, slaughter weights of hogs and cattle were near-record for much of 1985/86, indicating that feeding rates had already been increased.

The growth in food, seed, and industrial (FSI) use of corn continues to level out after the sharp increases of the late 1970's and early 1980's. Corn sweeteners and ethanol have provided much of the past growth in processed product demand. Demand growth of 80 to 100 million bushels, which was typical of past years, has now been slashed to an increase of 20 million bushels for the 1986/87 crop year. A continuation of this trend is likely for the next several years as many of the big-growth FSI markets begin to mature.

Per capita use of corn sweeteners in the United States will easily surpass sugar (sucrose) use in 1986. HFCS production appears to be approaching the current plant capacity limits. This fact, along with the saturation of HFCS markets means that HFCS production is not expected to match the dynamic growth trends of the past.

The ethanol situation remains in question. The potential is still there for large scale use of ethanol as an octane booster. However, questions remain concerning perceived quality problems of gasohol. While the ethanol industry remains convinced of the high quality of its product, the ultimate judge will be the consumer.

The other problem facing the ethanol industry is the low price of petroleum. At recent price levels, further refining petroleum oil to boost octane has become a competitive alternative to blending ethanol. Strong competition from petroleum and perceived quality problems make it difficult to project ethanol production to increase much above current levels in the near term.

The outlook for corn exports has been dimmed considerably by recent upward revisions in the Soviet grain crop. This development, along with the slow pace of export sales this season has led to recent downward revisions in forecast feed grain exports in 1986/87. Corn exports are now expected to be 1.3 billion bushels, only about 60 million above 1985/86, and substantially below other recent years.

With large supplies and moderate demand, the corn carryout continues to climb. Current projections place the 1986/87 carryout at a record 5.6 billion bushels, surpassing the record 4 billion estimated for this past September 1.

Monthly farm prices for corn have declined steadily since last May as the prospects of a greatly lowered price support loan rate, moderate demand, plentiful free supplies, and near-ideal growing conditions for the 1986 crop fueled bearish sentiments. Since the start of the 1986/87 marketing year, farm prices have been about 35 percent below a year earlier. The October price of \$1.31 per bushel was the lowest since November 1972. Thus, even with

a loan rate of \$1.92 per bushel (\$1.84 to farmers after Gramm-Rudman-Hollings reductions), the average farm price of corn will likely be \$1.35 to \$1.65 per bushel in 1986/87.

Slow demand growth is also affecting the other feed grains. While monthly sorghum farm prices are 28 percent below year-earlier levels, they have remained high relative to corn. In October, the sorghum farm price of \$1.32 per bushel was well above the traditional 90 to 95 percent price relationship to corn. Gulf port sorghum prices in October were \$1.76 per bushel, compared with \$1.66 for corn. With sorghum prices high relative to corn, sorghum exports and feeding could be discouraged this marketing year. Since export commitments are lagging last year's pace, sales will have to pick up briskly later this year to meet the projected 200 million bushel exports.

Barley production in 1986 was a record 600 million bushels, up marginally from the last 2 years. Feed disappearance of barley was record high in 1985/86, and in 1986/87 is expected to stay high, but fall more in line with recent years. Use of barley and malt in brewing and distilling has fallen steadily in the 1980's, as beer and distilled beverage product demands have flattened. Thus, other domestic use will remain flat.

U.S. barley exports received an enormous boost by sales through the Export Enhancement Program to Saudi Arabia. Barley exports are projected this season to be 100 million bushels, based largely on Saudi purchases.

Monthly barley farm prices have been 20 to 30 percent below year-earlier levels in 1986/87, although by October, the farm price was no longer declining. Feed barley prices appear to have bottomed out in August. For 1986/87, the barley farm price is expected to average between \$1.40 and \$1.60 per bushel.

1986 oat production is an estimated 384 million bushels. This was down 137 million from last year. Thus, total supplies will be 26 percent lower.

Because of tight supplies and a smaller dairy herd, oat feed use is projected to drop to 400 million bushels, down 61 million. Exports are expected to stay at 2 million, with FSI use slightly increasing to 85 million bushels.

Therefore, 1986/87 ending stocks are projected at 109 million bushels, a 40-percent drop from last year. This would mean a stocks-to-use ratio of .22, which represents the tightest supply situation of record.

Because of the tight supply, the normal oat/corn price ratio has been affected. Typically, oat prices have averaged about 50-55 percent of corn prices. In the current marketing year, oat prices are expected to be 70 to 80 percent of the corn price, at \$0.95 to \$1.20 per bushel.

WORLD COARSE GRAIN SITUATION

Global feed grain production in 1986/87 is forecast to be the second largest ever, despite a large decline in U.S. production. At over 830 million metric tons, the global crop is only 17 million tons below the 1985/86 record, when domestic production was almost 25 million tons larger. Somewhat offsetting the forecast decline in the United States, foreign production will likely grow by about 6 million tons.

Large carryin stocks for 1986/87, coupled with production gains in some key countries, have continued to force exporters to accept lower prices. 1986 production in foreign coarse grain exporting countries (including Argentina, Australia, Canada, South Africa, and Thailand) is only marginally larger, at 66 million tons. However, feed-quality wheat is in ample supply, particularly from Canada and Australia, further complicating and intensifying coarse grain export competition this year.

Easing this pressure somewhat, production in the major importer countries (including, but not limited to the European Community, the Soviet Union, Mexico, and Japan) is forecast in 1986/87 to fall slightly, to about 280 million tons. This, coupled with dramatically lower grain prices and the ready availability of feed grains for exports, has led to expectation of a slight increase in global trade. World trade in coarse grains is forecast at 84.8 million tons, up from 83.8 in 1985/86, but well below other recent years. U.S. coarse grain exports are forecast at 40.3 million tons, also below recent years except for 1985/86.

The big news in foreign grain production is in the Soviet Union. For the first time in 6 years, the Soviet Union has published grain data by grain type. Following record production in 1978 (238 million tons) and a poor crop the next year, the Soviets began a policy of not reporting crop production data. However, publication of the national statistical handbook and several other sources marked the beginning of a new policy of openness.

Data reported for 1981 through 1985 indicate production close to USDA estimates. However, the new slightly lower feed use data indicate some grain stockpiling may have taken place in the first half of the 1980s--thereby at least partially explaining the recent Soviet absence from international grain markets. Recent Soviet purchases have been limited to Canada and the EC-12.

Official Soviet republic-by-republic procurement data were also recently published. These data, along with pronouncements from high-ranking members of the Politburo indicate that Soviet production in 1986/87 is better than anticipated. The revised USDA forecast of 195 million tons is above last year, and the second largest crop this decade.

Competition in world grain markets in 1986/87 has been intensified by increased sales by China to South Korea, Japan, and the USSR. For the year, sales are likely to exceed 6 million tons. As a result, the forecast of U.S. coarse grain exports (largely corn) continues to show modest growth over the previous year. In 1986/87, U.S. corn exports are forecast at 33 million tons, up 1.5 million, while sorghum trade is likely to increase more than 500,000 tons. In total, U.S. sales may increase by about 10 percent.

THE NEW CROP YEAR

In 1987, feed grain acreage will likely decline. The 20 percent Acreage Limitation Program and the 15 percent Diversion Program will likely pull a substantial area out of production. The reduction in plantings will depend on program signup, participation in the Diversion Program, and plantings outside the program.

Program signup will likely be at least as high as this year, since program benefits will increase because of frozen target price, lower loan rate, and larger supplies. Some questions remain on the effect of the \$50,000 payment limit, which would constrain payments on roughly 10 percent of the U.S. corn base.

Even so, we are likely to idle more than 20 million acres of corn base. Therefore, corn plantings are likely to be in the mid to high 60's. Overall feed grain plantings will likely decline 10 percent.

Food, seed and industrial use will likely continue to increase by around 2 percent per year. Demand for food, sugars, and starches will grow with the economy and the population. Ethanol demand is still uncertain, however. Higher petroleum prices and continued subsidies would be positive factors in ethanol demand.

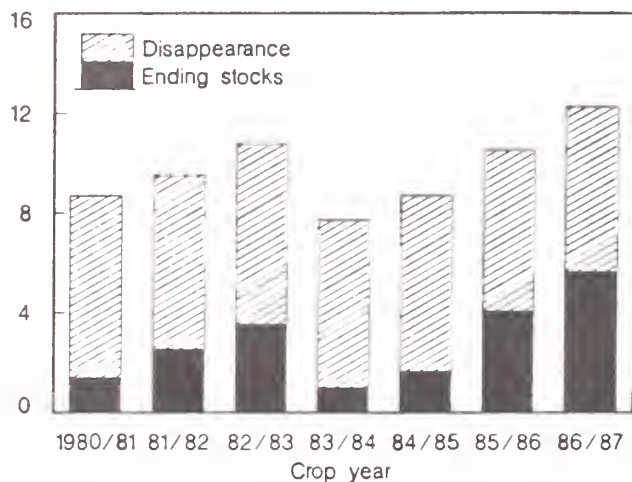
As feed costs are likely to stay low, feed demand could surge in 1987/88. Hog and broiler growers are likely to push production up if their profit margins remain high. However, livestock producers' profits may dwindle if meat supplies increase greatly, and feed demand may level off or decline the following year.

In the world market, the lower prices should stimulate demand and discourage production, as foreign producers face lower farm income or larger farm subsidies. Although foreign producers may not radically reduce their coarse grain output, there is some evidence that adjustments may take place.

Overall disappearance of U.S. feed grains will likely be about level with production, eliminating or reducing the growth in carryout.

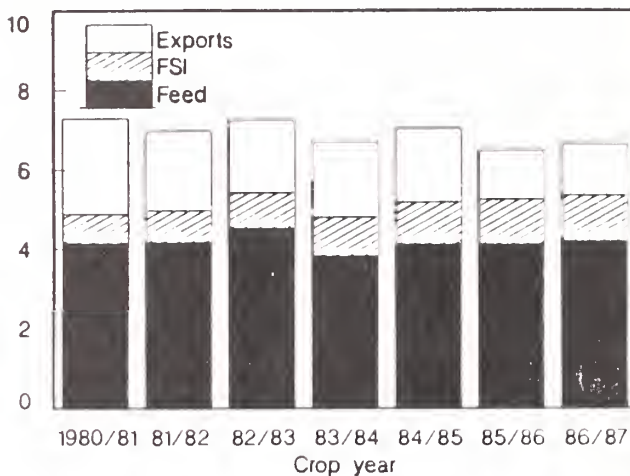
Corn Supply and Disposition

Billion bushels



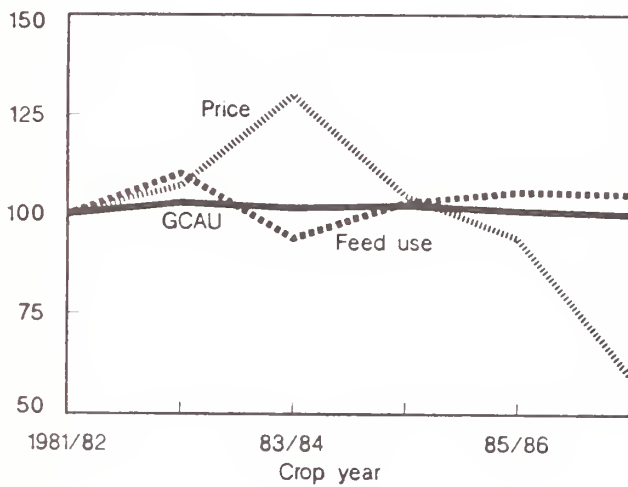
Corn Disappearance

Billion bushels



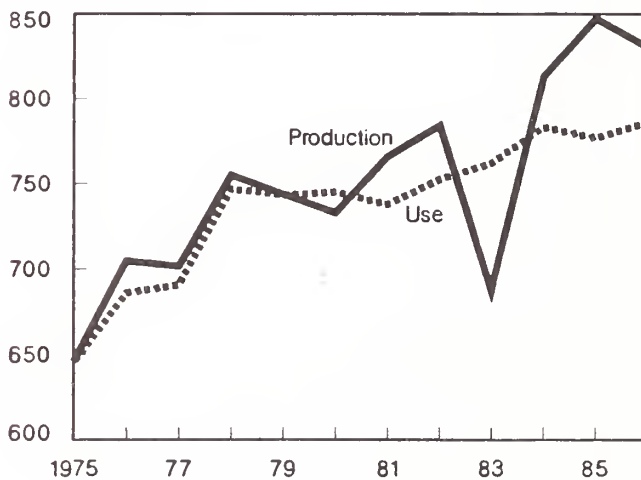
Animal Units, Feed Use, and Prices

% of 1981/82



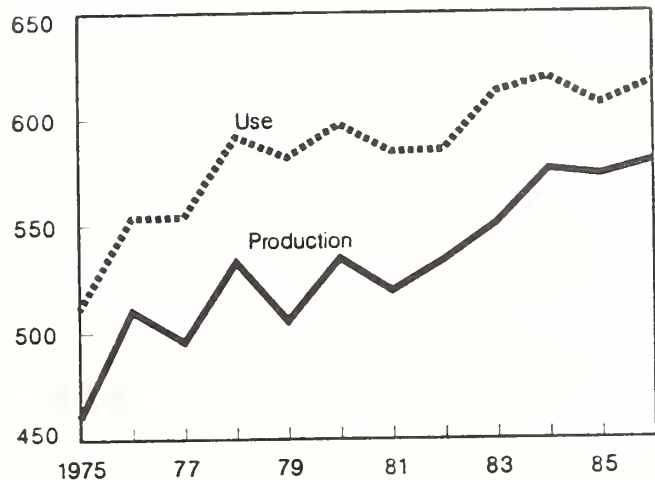
World Coarse Grain Production and Use

Million metric tons



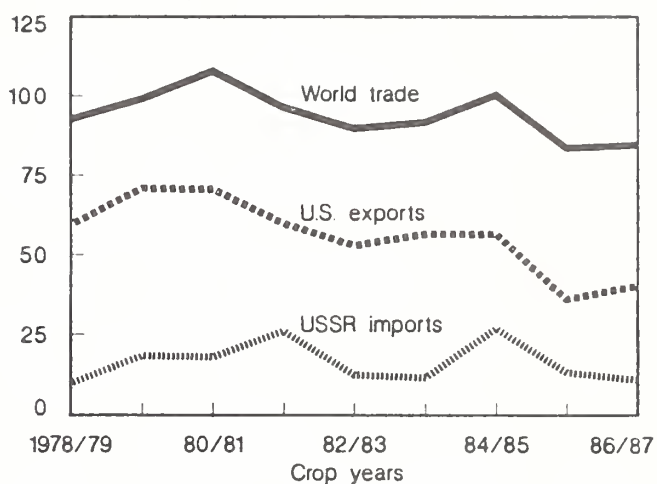
Foreign Coarse Grain Production and Use

Million metric tons



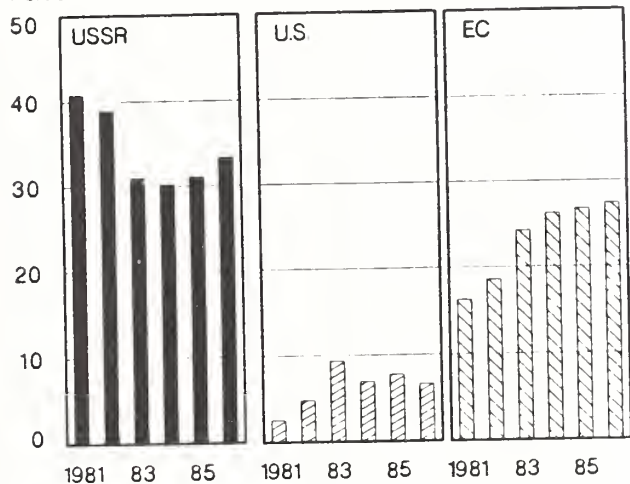
World Coarse Grain Trade

Million metric tons



Wheat's Share of Total Grains Fed

Percent



ANNUAL AGRICULTURAL OUTLOOK CONFERENCE

United States Department of Agriculture
Washington, D.C.



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OUTLOOK FOR JAPAN'S IMPORTS OF FEEDGRAINS

Shohei Sakai

Marubeni America Corporation

JAPAN'S FEED PRODUCTION (FISCAL YEAR)

	<u>COMPOUND FEED</u>		<u>MIXED FEED</u>		<u>TOTAL</u>	
1965	7,677	+9.9%	474	+7.4%	8,150	+8.7%
1976	18,005	+10.1%	612	+32.2%	18,613	+10.7%
1977	19,174	+6.5%	704	+15.0%	19,878	+6.8%
1978	20,217	+5.4%	850	+20.7%	21,067	+6.0%
1979	21,559	+6.6%	879	+3.4%	22,438	+6.5%
1980	21,337	-0.8%	864	-1.7%	22,252	-0.8%
1981	21,102	-1.3%	1,057	+22.3%	22,159	-0.4%
1982	21,693	+2.8%	1,184	+12.0%	22,877	+3.2%
1983	22,569	+4.0%	1,711	+44.5%	24,280	+3.9%
1984	22,821	+1.1%	1,673	-2.2%	24,494	+0.9%
1985	23,358	+2.4%	1,743	+4.9%	25,102	+2.7%
1986						
1987						

CORN IMPORT BY ORIGIN (ALL PURPOSE)

	<u>U.S.</u>	<u>S. AFRICA</u>	<u>ARGEN- TINE</u>	<u>CHINA</u>	<u>THAI</u>	<u>OTHERS</u>	<u>TOTAL</u>
1980	11,674	908	-	-	233	15	12,830
1981	12,129	1,432	-	-	-	31	13,590
1982	10,956	2,399	-	-	210	6	13,371
1983	13,437	*1,209	31	-	-	23	14,700
1984	13,737	-	99	211	-	122	14,169
1985	10,963	77	466	2,576	22	110	14,214
1986							
1987							

CORN IMPORT BY ORIGIN (FEED PURPOSE)

	<u>U.S.</u>	<u>S. AFRICA</u>	<u>ARGENTINE</u>	<u>CHINA</u>	<u>THAI</u>	<u>OTHERS</u>	<u>TOTAL</u>
1980	9,474	-	-	-	223	4	9,701
1981	10,266	88	-	-	-	21	10,375
1982	9,945	170	-	-	190	11	10,316
1983	10,978	2	20	-	-	10	11,010
1984	9,968	-	90	165	-	51	10,274
1985	8,308	-	410	1,389	12	81	10,200
1986							
1987							

CORN IMPORT BY ORIGIN (NON-FEED PURPOSE)

	<u>U.S.</u>	<u>S. AFRICA</u>	<u>ARGENTINE</u>	<u>CHINA</u>	<u>THAI</u>	<u>OTHERS</u>	<u>TOTAL</u>
1980	2,200	908	-	-	-	21	3,129
1981	1,863	1,344	-	-	-	8	3,215
1982	1,011	2,229	-	-	-	15	3,255
1983	2,459	*1,207	11	-	-	12	3,690
1984	3,769	-	10	45	-	71	3,896
1985	2,659	79	56	1,189	10	30	4,023
1986							
1987							

SORGHUM IMPORT BY ORIGIN (ALL PURPOSE)

	<u>U.S.</u>	<u>ARGENTINE</u>	<u>AUSTRALIA</u>	<u>CHINA</u>	<u>OTHERS</u>	<u>TOTAL</u>
1980	3,813	79	326	-	1	4,219
1981	2,855	26	406	-	14	3,301
1982	2,130	335	410	-	3	3,428
1983	1,169	2,246	139	-	11	3,565
1984	1,860	1,613	1,000	-	5	4,478
1985	2,569	1,264	792	150	12	4,787
1986						
1987						

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FEEDGRAINS OUTLOOK 1987 -- AN INDUSTRY VIEW

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Figure 1 shows my view of the U.S. corn supply-demand table for 1987-88. Most researchers keep such a table. I keep mine more for the sake of focusing discussion than in the belief I can actually use supply and demand to predict price.

My estimate of planted acres for next spring is 68 million. This assumes a base acres figure of 82 or 83 million, participation of 80 plus percent in an Acreage Reduction Program of 20 percent, and participation of 85 percent (of the original 80 percent in ARP) in a Paid Diversion of 15 percent. The ARP will have about the same slippage as last year, reducing the total acres to 77 million, and the Paid Diversion will provide another 8 or 9 million, leaving the 68 million as planted.

I use 117 bu/acre as the trend yield. This is a straight line concept, over the past 15 years. I know that many analysts use a higher number, on the argument that farmers always set aside the worst ground. They probably do, but I've never been able to confirm this in statistical analysis of yield trends. I project less fertilizer expenditure in the Spring, perhaps moreso than the reduced acres would indicate, because of low corn price -- and this persuades me to stay with a trend yield of 117 bu/ac.

So production would be a little over 7 billion bushels. I put in exports at 1500 million bushels, to keep the table looking optimistic. I also raised domestic use by 100 to 5450 million bushels. These assumptions would lead to total usage somewhat below production. Ending stocks would approach 6 billion bushels.

Would the largest carryover of all time produce a lower price? Is more storage required for next year? The only honest answer to this is, "I don't know."

What the table really illustrates is that the U.S. government has its hands on nearly a full year's corn crop -- which it will introduce into the market as it sees fit, by means of PIK certificates. The quantity and timing of these certificates have much more impact on "market" price than anything on my supply-demand table.

By what rationale will USDA release these certificates? I don't know. Is the rationale predictable? I doubt it. Will the rationale be logical? I imagine that, yes, it will be logical -- as in the phrase "political logic." The recent feedgrains program announcement ahead of election illustrates what I mean by "political logic."

As an analyst, I have asked myself many times what I can do to improve my devices for handling the situation. Managers, like audiences, get tired of hearing "I don't know," despite its obvious virtue of being the Truth.

How did we get to this point, anyway, in which we have a feedgrains program that simultaneously sets aside land, to force price up, and cuts loan rates, to force price down -- and which contributes \$25 or \$30 billion to the national deficit, which many people say is the root cause of all of our problems to begin with? The 1985 Farm Bill, it seems to me, is more an assortment of options and discretions than it is a coherent policy. Only the executing Administration gives it any clarity at all. When I hear people say, "Give the farm bill a chance to work," I know they probably haven't tried to read it.

So let me run through some of the devices I have concocted to avoid saying "I don't know" for the next ten minutes, so that at the end it will sound more convincing.

First, domestic usage. Won't low prices mean a lot more usage? Isn't price-volume elasticity an inviolable fact of economic life? Figure 2 shows the history of price changes to domestic feeding rates, in terms of tons fed per Grain Consuming Animal Units (GCAU's). The graph is in terms of percent deviation from average, and you can see that upward moves in price are usually associated with downward moves in feeding rates -- with notable exceptions, such as the mid-1970's, which were the years of price control on meats. To get much encouragement from this chart, that low prices will push animal feeding, you need to believe that livestock prices will stay strong independently, regardless of GCAU total, and regardless of consumer trends in beef versus pork versus chicken.

The other categories of domestic use, including High Fructose and Alcohol, offer no way out of the dilemma of pure politics. If only the price of oil would rise independently of corn!

Figure 3 shows world trade tonnage in coarse grains, which peaked in 1980-81. The United States' share of these tons looks so bad it's hard to tell if there's still an upward trend or not.

Figure 4 is the same graph but from our competitors' point of view. The upward trend in foreign coarse grains exports is steady. This suggests that our problem is one of competitive response -- more, perhaps, than just weak world demand itself. Policy is blamed for this, but I don't know whether it's the cause or the effect.

The strong dollar has also been blamed. Figure 5 shows various ways of plotting what the dollar has done. The bold, solid line is the most often used weighted exchange rate, kept by the Federal Reserve. Running quite parallel to it is the USDA's grain weighted exchange rate. But both of these measures are based on trade patterns of the early or mid-1970's. A newer measure, the so-called X-131 of the Dallas Fed, includes all 131 U.S. trading partners and rolls its average year by year. Notice that the old Fed index has declined nearly 40 percent in the past year; but the X-131 has only declined about 8 percent. The new measure accounts for the fact that the dollar has dropped mainly against the Yen and the European currencies, but that much of the rest of our trading partners have tied themselves to the dollar. Could this be, perhaps, the reason why elasticity has been somehow suspended from export sales?

Figure 5 does several things: First, it includes both coarse grains and soybeans and soybean meal, because I believe these are priced as one by the world livestock feed market; secondly, it converts tons to value -- the top line being in billions of dollars, fob Gulf. And thirdly, the bottom line is in so-called "real" value -- being the billions of U.S. dollars converted by X-131 into average foreign dollars, and then deflated by the USGNP export deflator. The graph illustrates the last two year's break with elasticity, or perhaps what you might call a "structural shift" in what the world will spend on its "livestock feed budget." The real expenditure in 1986 appears lower than at any time since 1972.

The next item in my list of devices is world economic output. Figure 6 shows world GNP per capita. The overall trend is certainly up, but I show two sub-trends, the fifties and the sixties. The sixties trend broke somewhere in the seventies, we drifted sideways, and now (mainly with the pickup in China) we have something like the fifties again. Perhaps the second oil price rise did it, I don't know.

Or perhaps it was the most fabulous creation of credit the world has ever seen, shown in Figure 7. It is hard to escape the conclusion that the boom we so loved in world trade was accompanied by, if not propelled by, a similar boom in credit -- which washed out in 1980. The pressure to pay debts has no doubt affected many countries' desire to export more, and import less. It may be, too, that in very general terms, nations have passed from doing what we said they should do, to what they thought they ought to do, to simply what works.

This summer's World Bank Development Report certainly took the view that most of the undeveloped world was a "China waiting to happen," in terms of the ability of gradual market orientation to increase the production of feedgrains. Figure 8 shows two yield trends, the U.S. versus all foreign. Certainly, our customers and our competition are starting from a low base, about half ours, and

there is no need to wait for biotechnology; foreign producers have only to apply what knowledge is already available, in a policy framework that let's it work. -- Note also from this graph the smoothness of world grain yield; it is no good hoping for a global drought everywhere but here.

Figure 9 is USDA data on foreign production versus population. Population is growing at the astounding rate of 75 million per year. That is one Washington, D.C., every week. A truly staggering proposition! How can they possibly survive? Note that foreign grain production has increased at 29 MMT per year over the past ten years -- which is 1100 million bushels, which is almost the addition of a State of Illinois every year, somewhere outside the U.S. Oilseeds have also grown at nearly 200 million bushels per year, outside the U.S. Combining these into vegetable protein, we see that foreigners have grown at 2.9% per year, or about 1 percent faster than population. Of the 75 million new people every year, 60 million are farmers.

Yet hunger persists. Figure 10 is my own estimate of what it would take to rid the world of hunger and malnutrition. I've been working with Dr. Dana Meadows at the American Association for the Advancement of Science, in a project to rewrite "The Limits to Growth," and I'm well aware of the limits of our knowledge of hunger. But permit me to speculate. The darkest estimate of malnutrition is something like a billion people, and other authorities say that the minimum diet is something like 400 pounds of grain equivalent per year (about 7 bushels). Suppose you divide them as shown here, with one-third needing a bushel, and so forth. The total is 500 million bushels. That seems like a lot -- until you recall that U.S. total exports of wheat, coarse grains, and oilseeds are down two billion bushels from our peak. We could solve world hunger, and yet not bring U.S. export capacity utilization up to 50%!

Figure 11 is my calculation of what it would take not just to solve hunger, but to bring all peoples to the same level of animal protein diet as presently enjoyed among the community of major grain exporters. To go from the world's present average of 14 pounds per person of animal protein to the 42 of the major exporters would mean a quadrupling of production in the major exporting countries, and especially in the U.S., and a seven-folding of world trade. I suspect that it is this intuitive knowledge of how all mankind would like to eat that keeps us all here in this business. It may be this intuitive knowledge as well, along with the utter incredibility that we must pay farmers not to grow grain while people are manifestly hungry, that confounds our ability to achieve a rational farm policy. I don't know.

But if you want to stay in the grain game, take a look at Figure 12. This is the long-term history of wheat price, compiled by Dr. Julian Simon, and updated by Simon and myself in a 1982 article. The price is stated in hours of labor needed to purchase a bushel of wheat. The trend is rather clear, and I would argue that perhaps this chart of all the preceding has the clearest message: The price of commodities moves relentlessly downward; if you want to compete, focus on getting your price down.

Figure 1

U.S. CORN SUPPLY-DEMAND TABLE

CROP YEAR Sep/Aug	AREA PLTD	AREA HVTD	YI- ELD	PRDN	EX- PORT	DMSTC USE	TOTAL USE	END STKS	STKS NOT CCC OR RSRV	PRICE TO FRMR
78-79	82	72	101	7268	2124	4872	6996	1709	866	2.25
79-80	81	72	110	7928	2415	5189	7604	2034	988	2.52
80-81	84	73	91	6639	2408	4875	7283	1392	1150	3.11
81-82	84	75	109	8119	2009	4966	6975	2537	980	2.50
82-83	82	73	113	8235	1834	5416	7250	3523	490	2.68
83-84	60	52	81	4175	1902	4793	6695	1006	358	3.25
84-85	81	72	107	7674	1865	5170	7036	1648	1039	2.62
85-86	83	75	118	8865	1241	5245	6486	4038	2928	2.35
MAY	86-87	ESTIMATES		7575	1625	5350	6975	4487	1252	1.95
JUNE				7575	1625	5350	6975	4587	1352	1.93
JULY				7910	1550	5350	6900	5024	2124	1.88
AUG	77	69	120	8316	1550	5400	6950	5380	2205	1.78
SEP	77	69	120	8268	1550	5400	6950	5339	2139	1.73
OCT	77	69	119	8220	1400	5350	6750	5511	2311	1.68
NOV	77	69	119	8223	1300	5350	6650	5614	2844	1.50
MARKET RESEARCH										
87-88	68	61	117	7150	1500	5450	6950	5814	2200	1.45

FEED GRAIN PRICE DEVIATION VERSUS DEVIATION IN TONS FED PER GCAU

SOURCE: JOHN STEWART, USDA

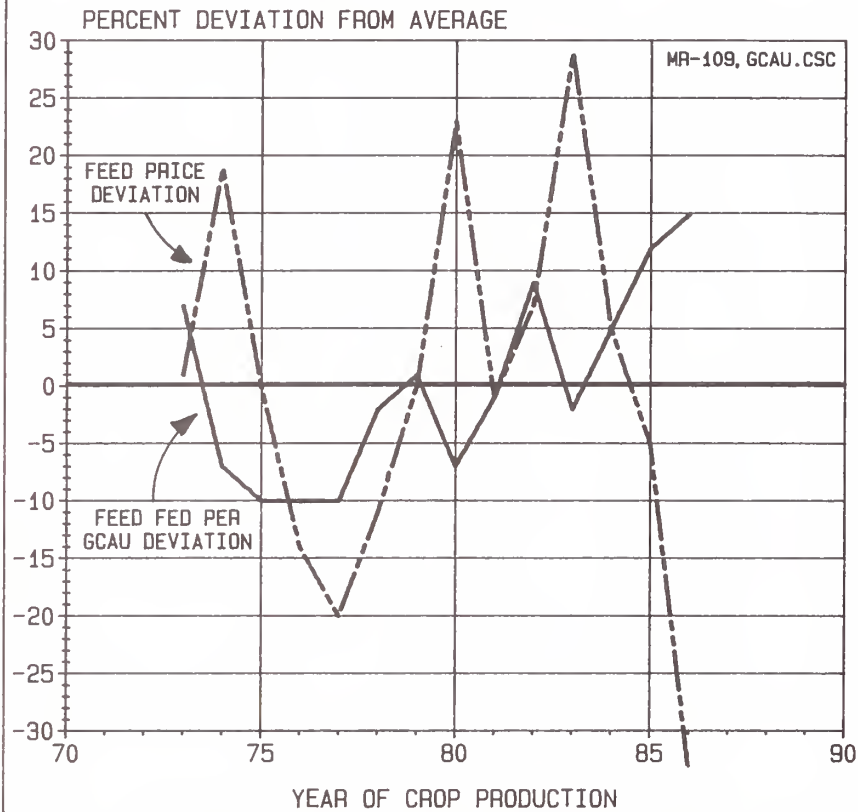


Figure 2

WORLD TRADE IN COARSE GRAINS AND U.S. COARSE GRAINS EXPORTS

SOURCE: USDA FAS GRAINS, NOV 86

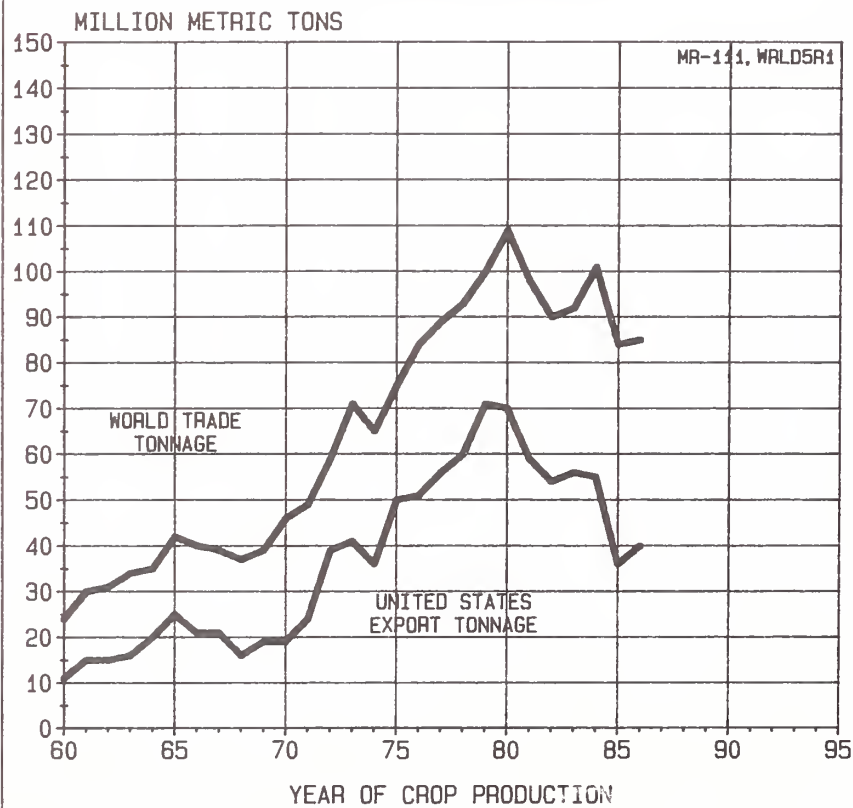


Figure 3

WORLD TRADE IN COARSE GRAINS AND FOREIGN COARSE GRAINS EXPORTS

SOURCE: USDA FAS GRAINS, NOV 86

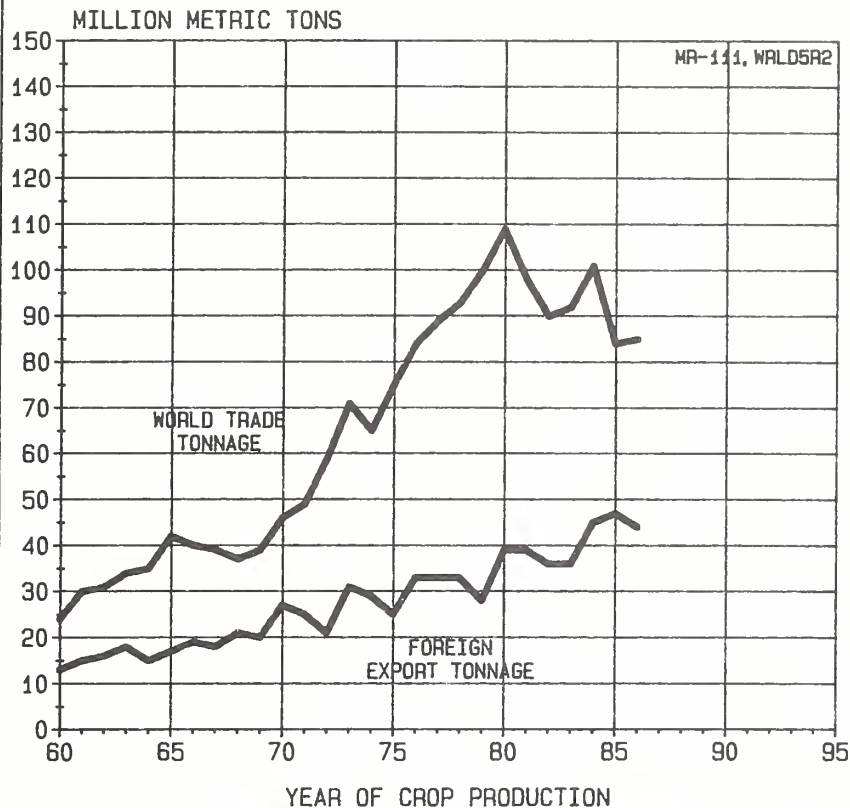


Figure 4

SELECTION OF EXCHANGE RATE INDEX: OLD FRB VS. NEW DALLAS FED VS. USDA GRAIN TRADE

SOURCE: USDA, FRB, DALLAS FED

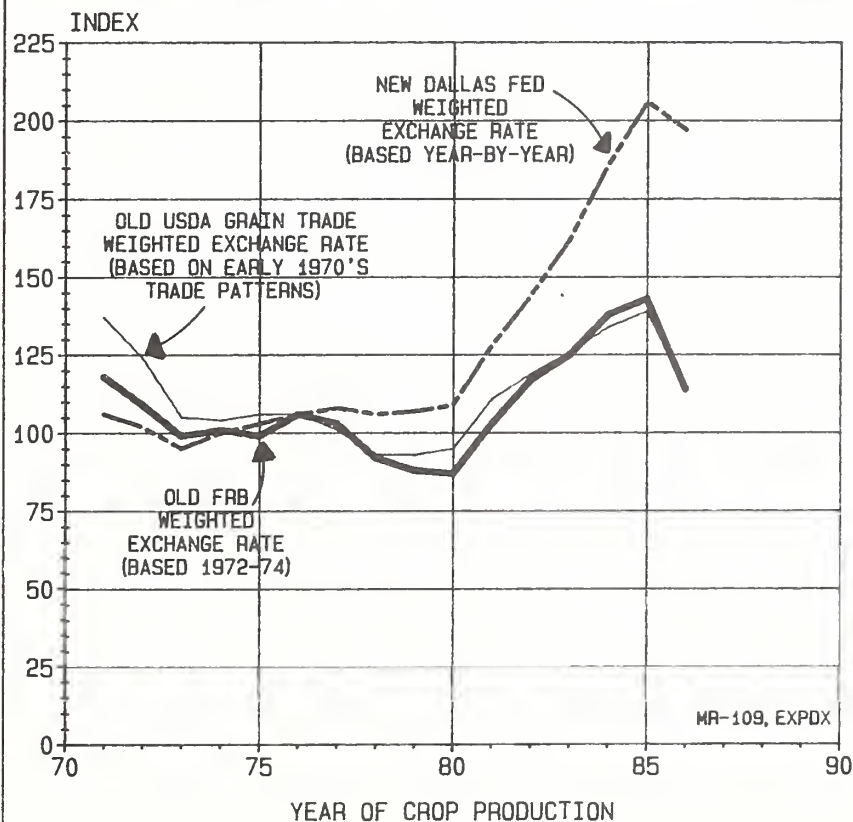


Figure 5

WORLD TRADE IN COARSE GRAINS & SOYBEANS -- UNADJUSTED VALUE AND DEFLATED FOREIGN VALUE

SOURCE: USDA FAS GRAINS, NOV 86; FRB; IMF

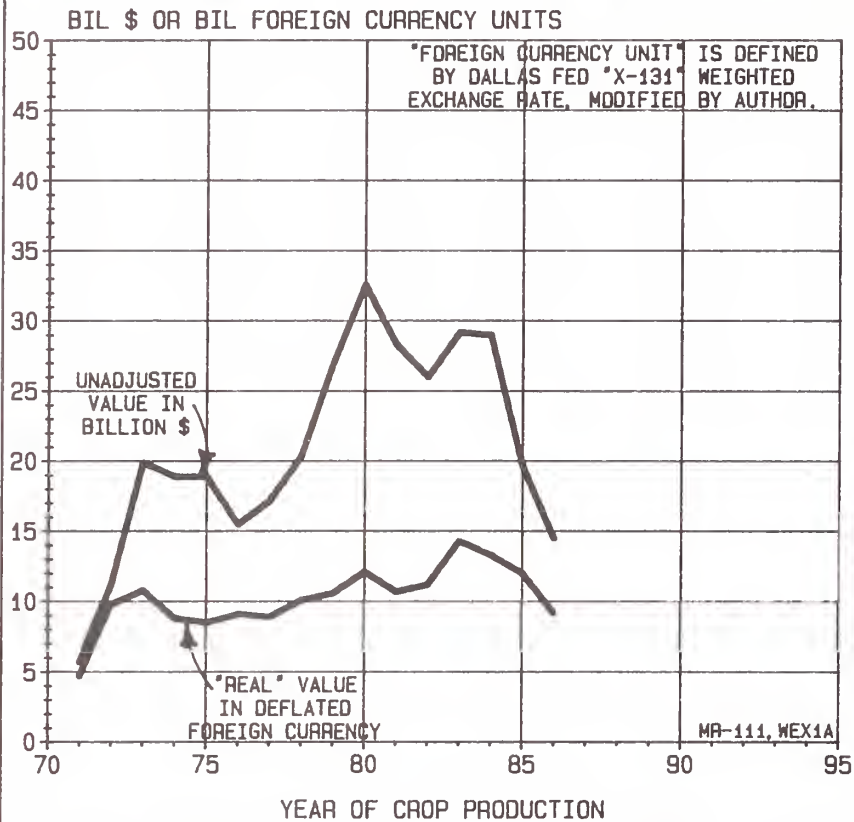


Figure 6

WORLD GNP PER CAPITA, 84\$ WITH TRENDS

SOURCE: CIA, UN, USDA (WRLD18D.PRN, HUDSON 4-24-86)

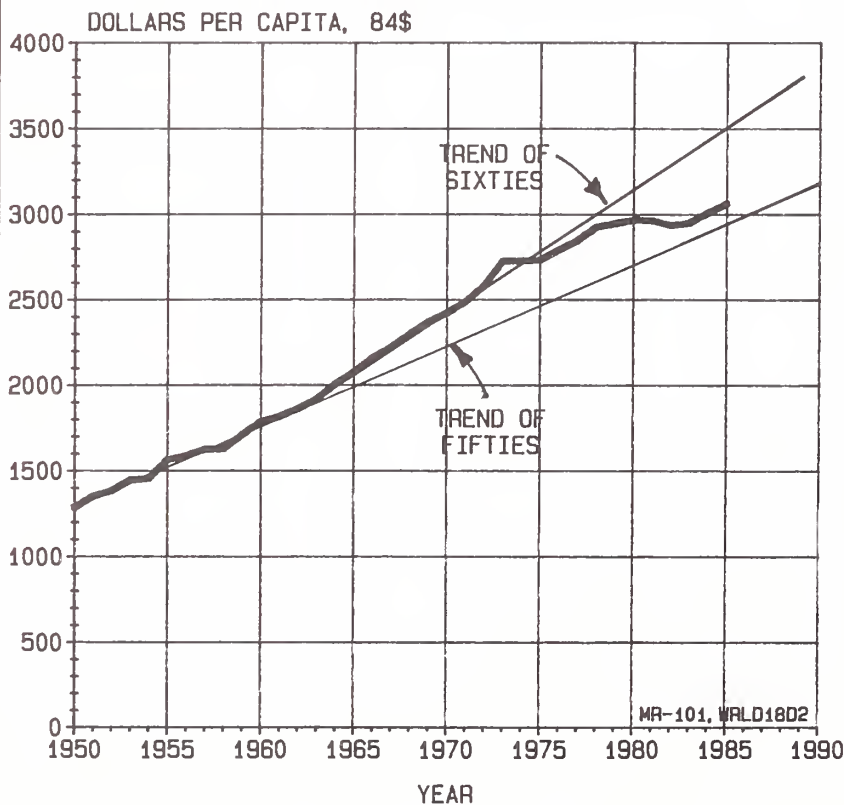


Figure 7

WORLD TRADE VS. EURO-CREDIT (DEBT)

SOURCE: UN, MORGAN BANK (WRLD17.WKS, BILL HUDSON, 1-28-86)

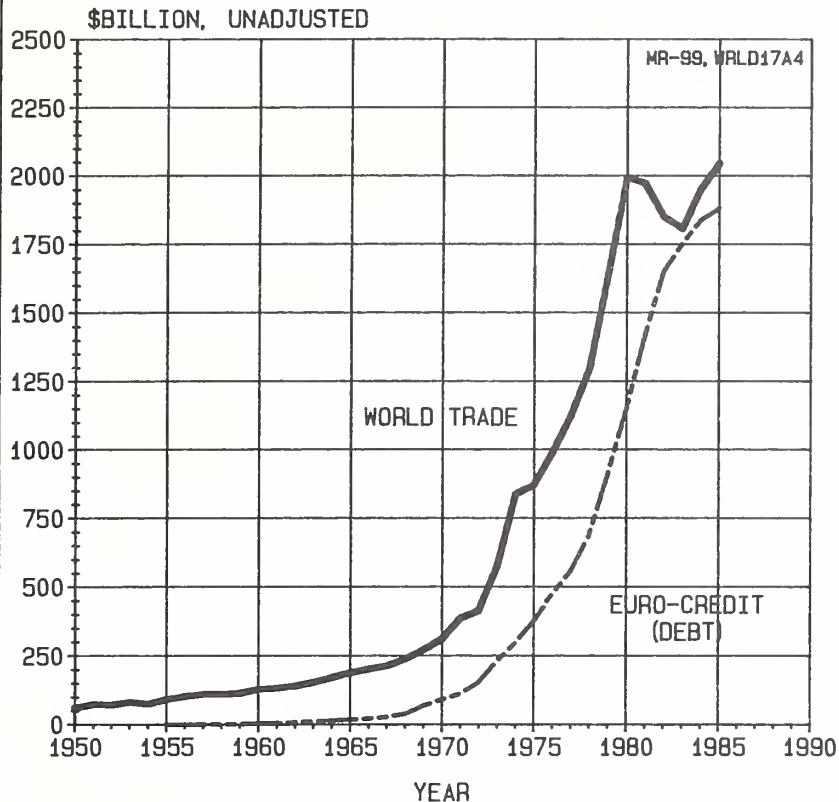


Figure 8

FOREIGN GRAIN YIELD VS. U.S. (WHEAT PLUS COARSE GRAINS)

SOURCE: USDA FAS GRAINS 10-86

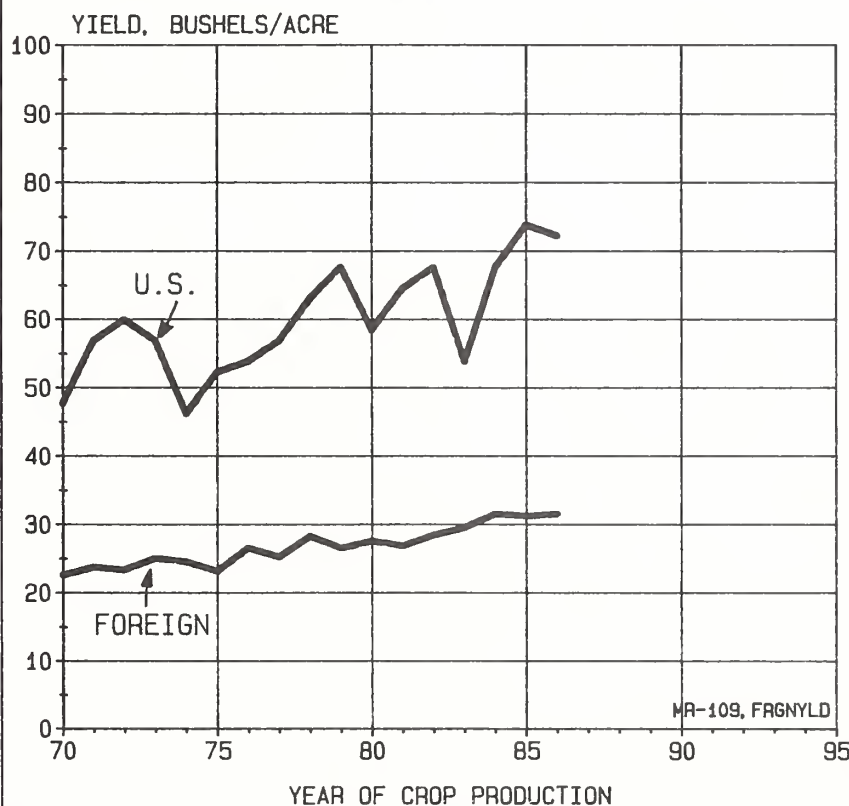


Figure 9

Figure 10

FOREIGN GRAIN AND OILSEED PRODUCTION

("Foreign" = World Excluding U.S.)

Source: USDA FAS, October 1986

Crop Year (Jul- Jun)	Foreign Total Grain Prdn			Foreign Total Oilseed Prdn			Foreign Total Protein Prdn			Frgrn Total Pop.		
	MMT	MMT	%	MMT	MMT	%	MMT	%	Pop.	MIL	%	
	(Wrld3)	Chng	Chng	(Wrld3)	Chng	Chng	Chng	Chng	MIL	Chng	Chng	
1977	1077			92			128		4007			
1978	1187	110	10	97	5	5	140	9	4078	72	1.79	
1979	1120	-67	-6	101	5	5	134	-4	4151	73	1.78	
1980	1173	54	5	100	-2	-2	139	4	4223	72	1.74	
1981	1170	- 3	0	106	6	6	140	1	4297	74	1.74	
1982	1211	41	4	110	4	4	145	4	4374	77	1.78	
1983	1278	67	6	115	5	4	153	5	4451	78	1.78	
1984	1331	53	4	131	16	14	162	6	4528	77	1.73	
1985	1318	-14	-1	130	-1	-1	160	-1	4606	78	1.72	
1986	1339	21	2	138	8	6	164	2	4684	78	1.69	
Avg. Avg. Avg. Avg. Avg. Avg. Avg. Avg.												
		29	3%			5	5%			3%	Avg. Avg.	
										75	1.8%	

Note: Protein content of grains estimated at 10%, oilseeds at 22%.

Figure 11

"CRASH" PROGRAM

TO RELIEVE HUNGER AND MALNUTRITION

MIGHT REQUIRE ABOUT 500 MIL BU

300 Mil	300 Mil	300 Mil
x 1 Bu	x 1/2 Bu	x 1/4 Bu
-----	-----	-----
300 Mil Bu	150 Mil Bu	75 Mil Bu

GRAIN & OILSEED PRODUCTION INCREASE REQUIRED TO RAISE WORLD ANIMAL PROTEIN DIET

SOURCES: USDC POPLTN; USDA GRAINS, OILSEEDS, MEATS

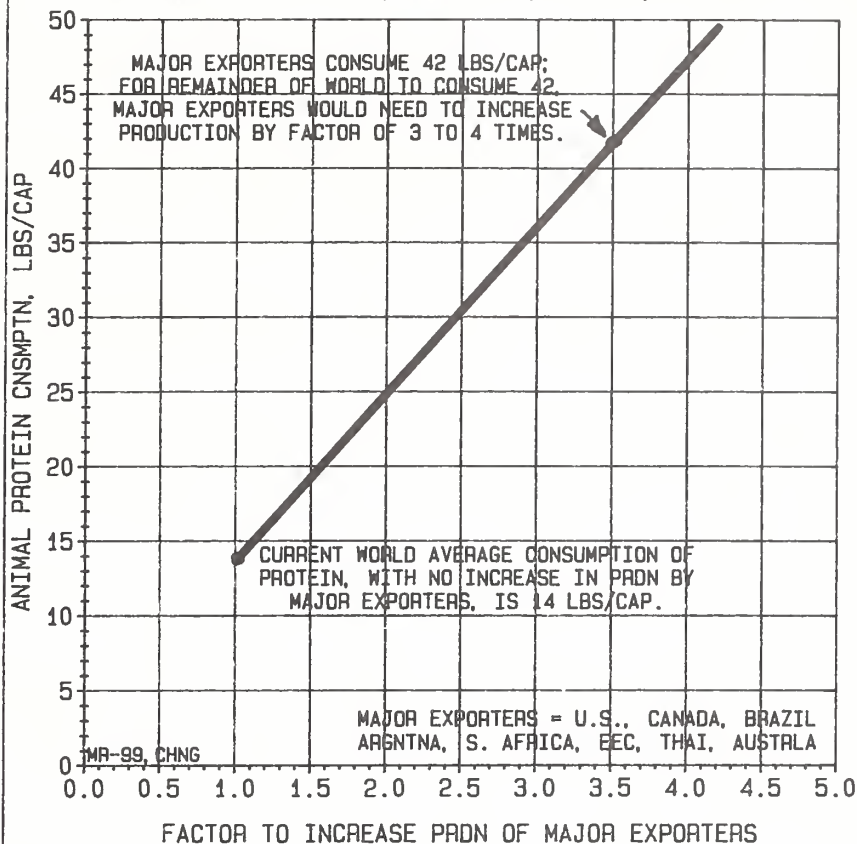
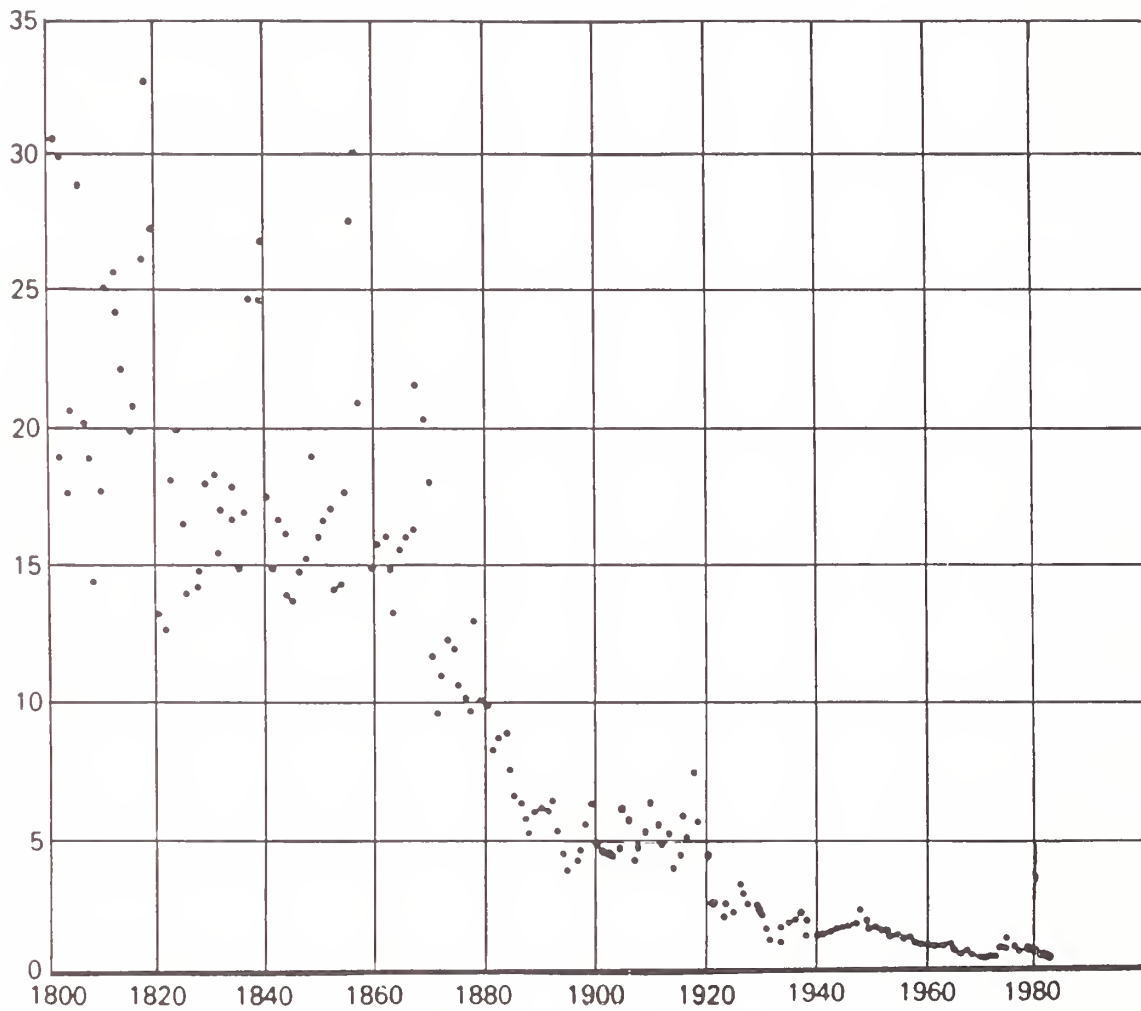


Figure 12

Figure 13

The Price of Wheat Relative to Wages in the U.S.

Source: Simon, Hudson. "Global Food Prospects: Good News,"
Challenge, November, 1982.



ANNUAL AGRICULTURAL OUTLOOK CONFERENCE

United States Department of Agriculture
Washington, D.C.



Outlook '87, Session #8

For Release: Wednesday, December 3, 1986

U.S. AND WORLD SITUATION AND OUTLOOK

Richard T. McDonnell
Deputy Director, Oilseeds and Products Division
Foreign Agricultural Service

Today I will take a longer term perspective in presenting USDA's assessment of the U.S. and world oilseed and product situation. I would like to present USDA's estimates graphically and in an historical perspective. There are some important trends underlying our estimates and I think these are more apparent to an audience when presented graphically and in an historical perspective.

Graph 1 (World and U.S. Protein Meal Consumption)

The most obvious point made in this graph has to do with the relative rates of growth of meal consumption in the United States and the rest of the world. United States meal consumption has grown relatively slowly in the period--from about 14 million tons in the early 1970's to about 20 million tons in 1985/86, with little change forecast for 1986/87. Protein meal consumption in the rest of the world has grown far more rapidly--from about 45 million tons in 1972/73 to over 85 million tons in 1985/86.

The second point is less apparent from the graph. That is, that there has been a significant slowing in the growth rate of world protein meal consumption. Between 1972/73 and 1979/80, world meal consumption grew by an average of 6.4 percent. Since 1979/80 (and including the 1986/87 estimate) world meal use has grown only by an average of 2.5 percent. The reasons for the slow down are many but the most important is the global recession which reduced demand for livestock products.

Graph 2 - World and U.S. Vegetable Oil Consumption

This graphs tells a similar story with respect to consumption growth in the United States and in the foreign sector. U.S. consumption of vegetable oils (not including animal fats) has grown from 4.4 million tons in 1972/73 to 6.1 million tons in 1985/86, with a forecast increase to 6.3 million tons in 1986/87. During the same period, foreign vegetable oil consumption grew by over 20 million tons, and is forecast to increase another 1.1 million tons in 1986/87. Because demand for vegetable oil is relatively inelastic, the growth rate for vegetable oil consumption has been fairly steady during the period. Between 1972/73 and 1979/80, vegetable oil use increased at an annual rate of 4.8 percent; since 1979/80 (and including 1986/87) vegetable oil use grew by an average of 4.4 percent.

Graph 3 - World and U.S. Oilseed Production

One important trend is evident on this graph. Whereas world oilseed production has basically trended upward throughout the period, U.S. oilseed production appears to have begun to stabilize, if not decline, in the past few years. This means that the U.S. share of world production is beginning to decline. As we shall see in the graphs that follow, the main reason for this has to do with U.S. export performance.

The first two graphs showed that meal and oil consumption is growing much faster outside the United States than in the United States. This means that U.S. oilseed production is dependent on the export market. This has been the case in the past, and will be increasingly true for the future.

Graph 4 - World and U.S. Oilseed and Product Exports

This is a graph of U.S. and world exports of all major oilseeds, protein meals and vegetable oils. It is very similar in appearance to, and in fact tracks closely with, the previous graph on oilseed production. What it shows is that U.S. oilseed and product exports held their own into the early 1980's but have actually declined since then. Total world exports have basically continued an upward trend, meaning of course that our major competitors have continued to increase while U.S. exports fell.

Graph 5 - World Oilseed and Product Exports

The top line of this graph is the same as that of the previous graph. It depicts total world exports of oilseeds, protein meals, and vegetable oils. The lower line is oilseeds only. What the graph is saying is that since about 1979/80, all the growth in world trade in the oilseed and product complex has been in product exports—that is, protein meals and vegetable oils. Total oilseed exports appear to have stabilized in the 31-36 million tons range. World exports of protein meals and vegetable oils have increased by about 11 million tons, in aggregate, since 1979/80.

Graph 6 - World and U.S. Oilseed Exports

This graph includes only oilseeds. What this graph depicts is that the United States has basically held its own as an exporter of oilseeds. U.S. and world total oilseed exports have tended to track closely together, although the United States slipped a bit in the past three years (especially 1984/85 - the year of the recent record Brazilian soybean crop).

But a very different picture emerges with respect to world trade in protein meals and vegetable oils.

Graph 7 - World and U.S. Protein Meal Exports

The message of this graph is clear. World exports of protein meals have grown fairly steadily since 1972/73, but basically all of the growth has been accounted for by other exporters, not the United States. U.S. protein meal exports (almost all of which are soybean meal) increased in the late 1970's and peaked in 1979/80 at 7.6 million tons. Since then the trend has been generally downward.

Graph 8 - World and U.S. Vegetable Oil Exports

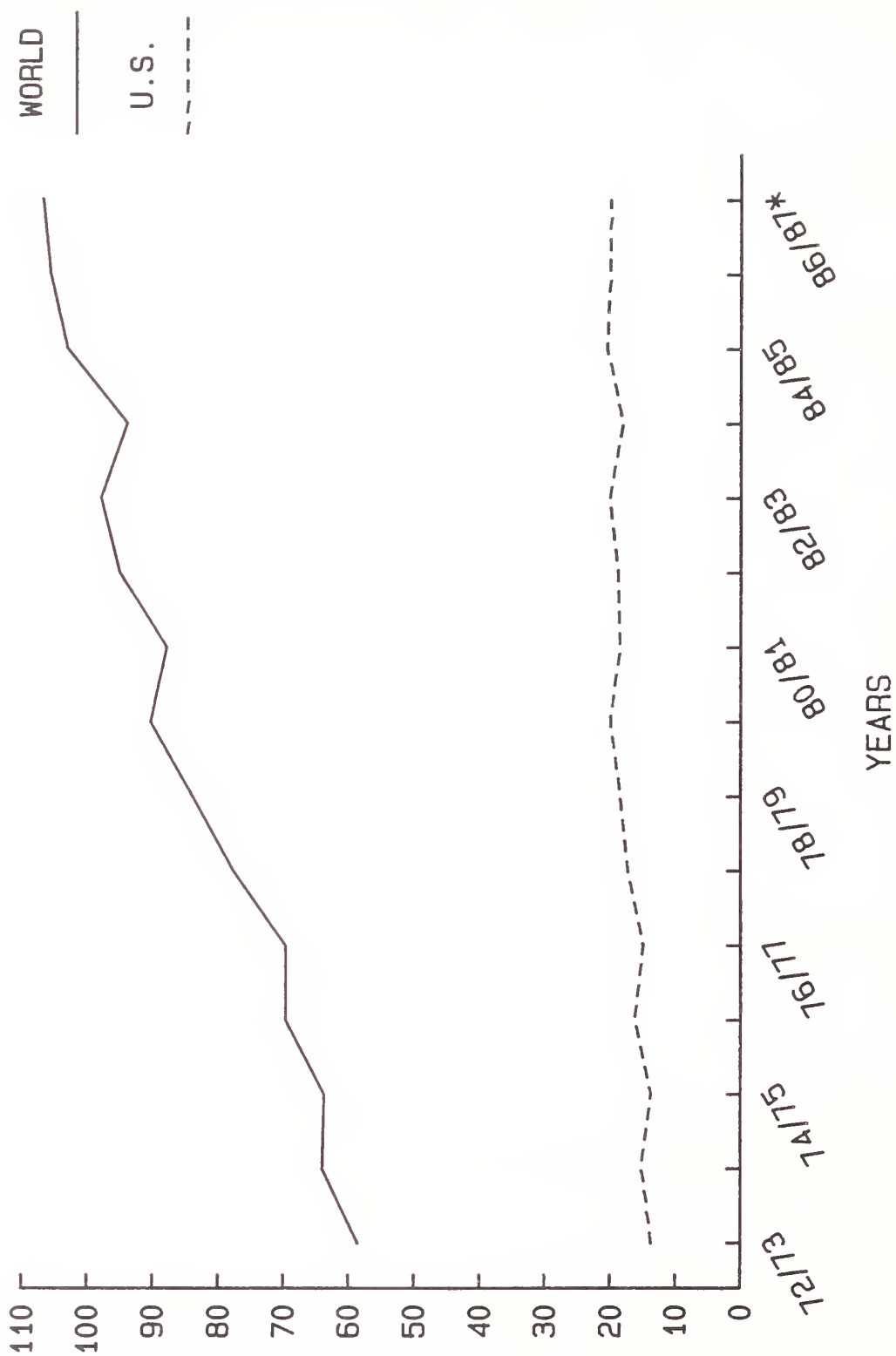
This graph tells a similar story to the previous graph, but perhaps in a more dramatic fashion. World vegetable oil exports have grown steadily and rapidly throughout the period. Virtually all of the export growth occurred outside the United States. Once again, U.S. oil exports peaked in 1979/80 and have declined since then.

The reasons for the relatively poor performance by the United States in oilseed product exports are many, and really are the subject of a separate speech. But the underlying trend is clear, and this is reflected in USDA's export forecasts for this year and our thinking about future projections.

I would like to conclude by summarizing USDA's oilseed and product 1986/87 forecasts and relate these to some of the points just made:

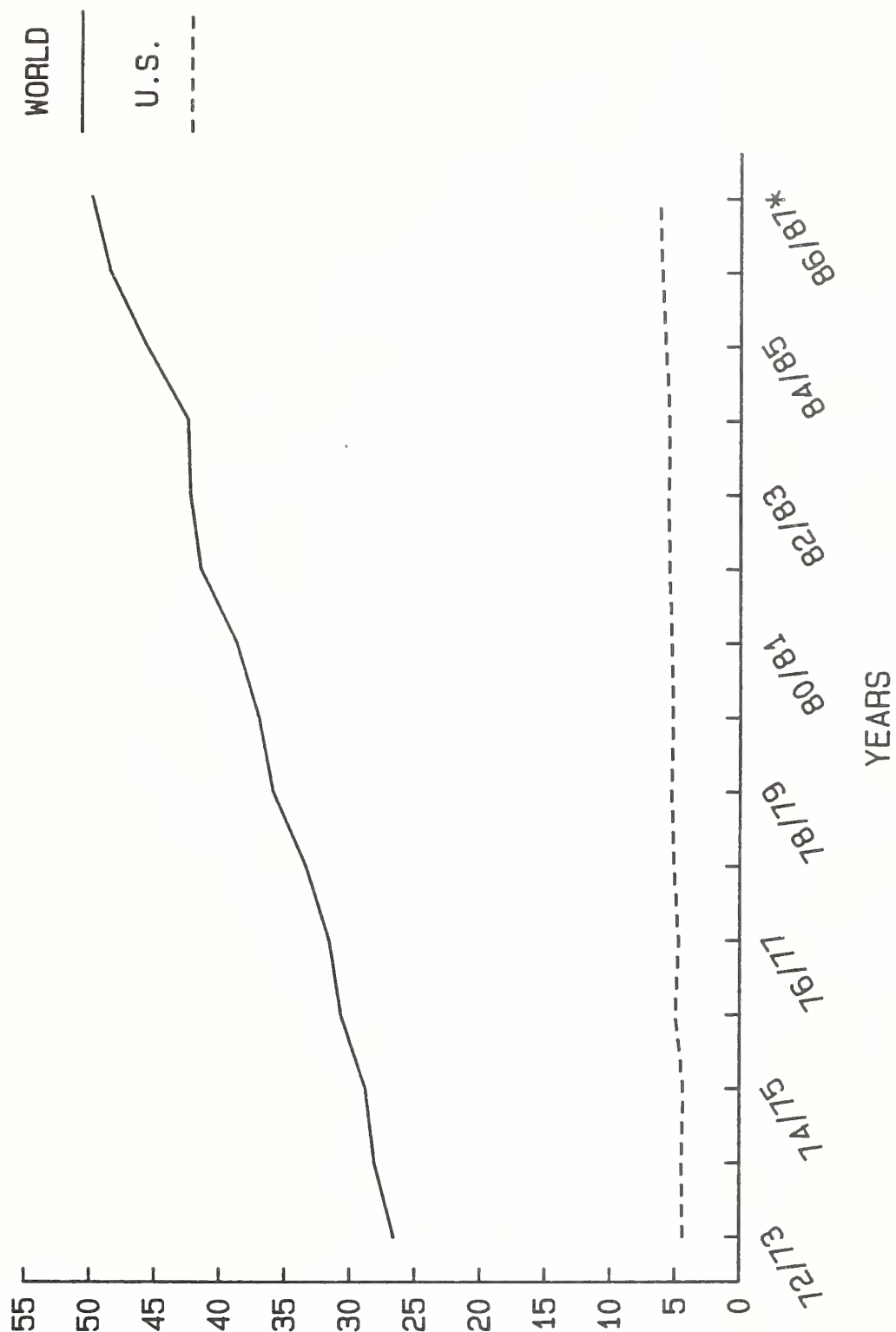
- 1) World oilseed production will be up again this year, but U.S. production will be down. This is a continuation of what we saw in the third graph.
- 2) Globally, consumption of both meal and oil will be up this year. The increase in vegetable oil consumption is basically a continuation of a long-term trend. The forecast increase in meal consumption is in line with the lower rate of consumption growth that we have seen in the 1980's. Once again, most of the increase in consumption will occur outside the United States.
- 3) Since consumption growth will not likely keep pace with the expected increase in production, oilseed stocks will build and prices will remain depressed.
- 4) World oilseed exports will increase a little in 1986/87, but will still remain below levels attained in the early 1980's. U.S. exports of oilseeds (mostly soybeans) will increase slightly, in line with the growth in total trade.
- 5) World protein meal exports will increase again this year, while exports of vegetable oil will remain essentially unchanged. U.S. exports of meal and oil will both decline in 1986/87, essentially continuing the downward trend of the past several years.

WORLD AND U.S. PROTEIN MEAL CONSUMPTION (MMT)



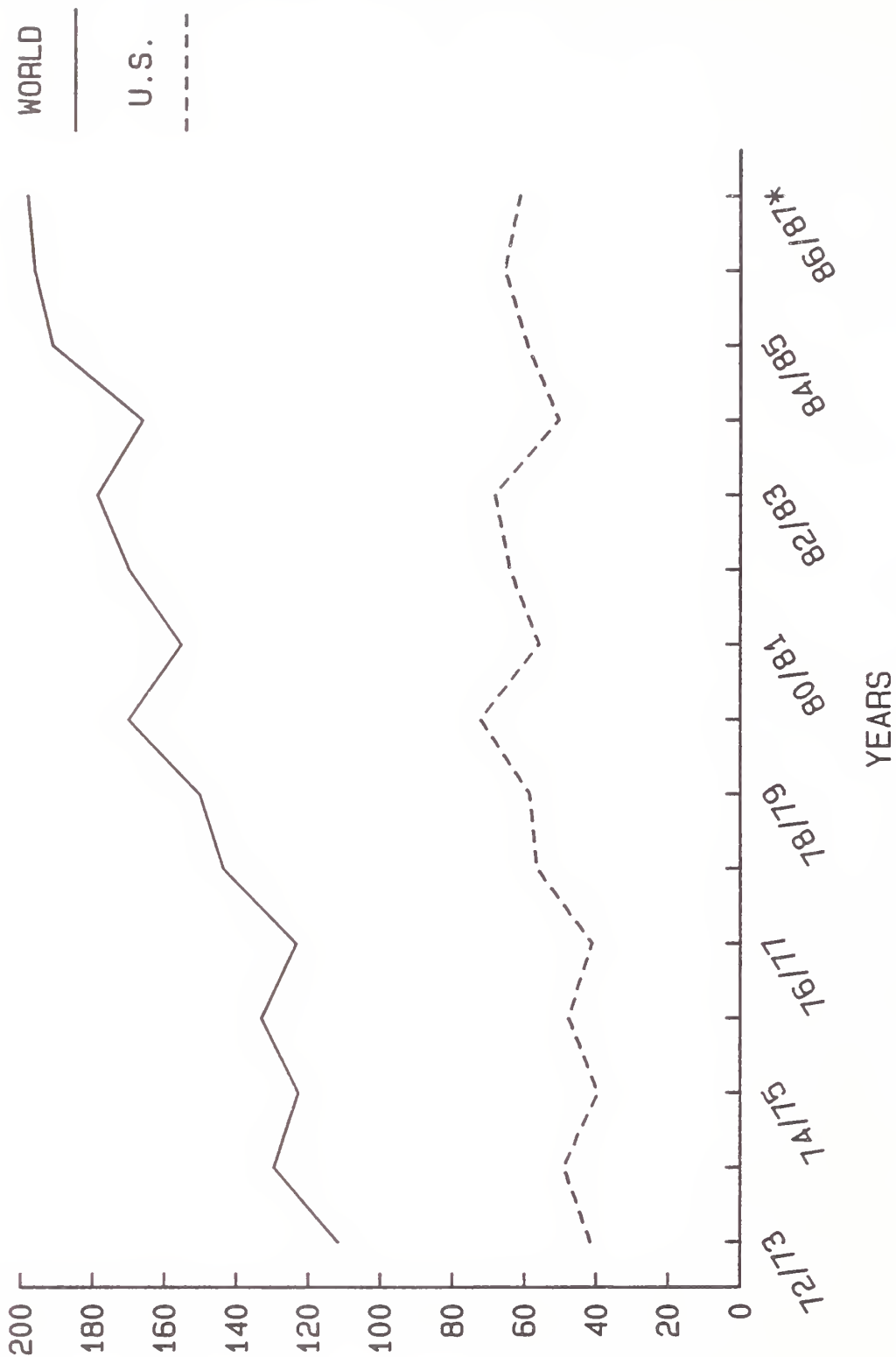
*ESTIMATED

WORLD AND U.S. VEGETABLE/MARINE OIL CONSUMPTION (MMT)



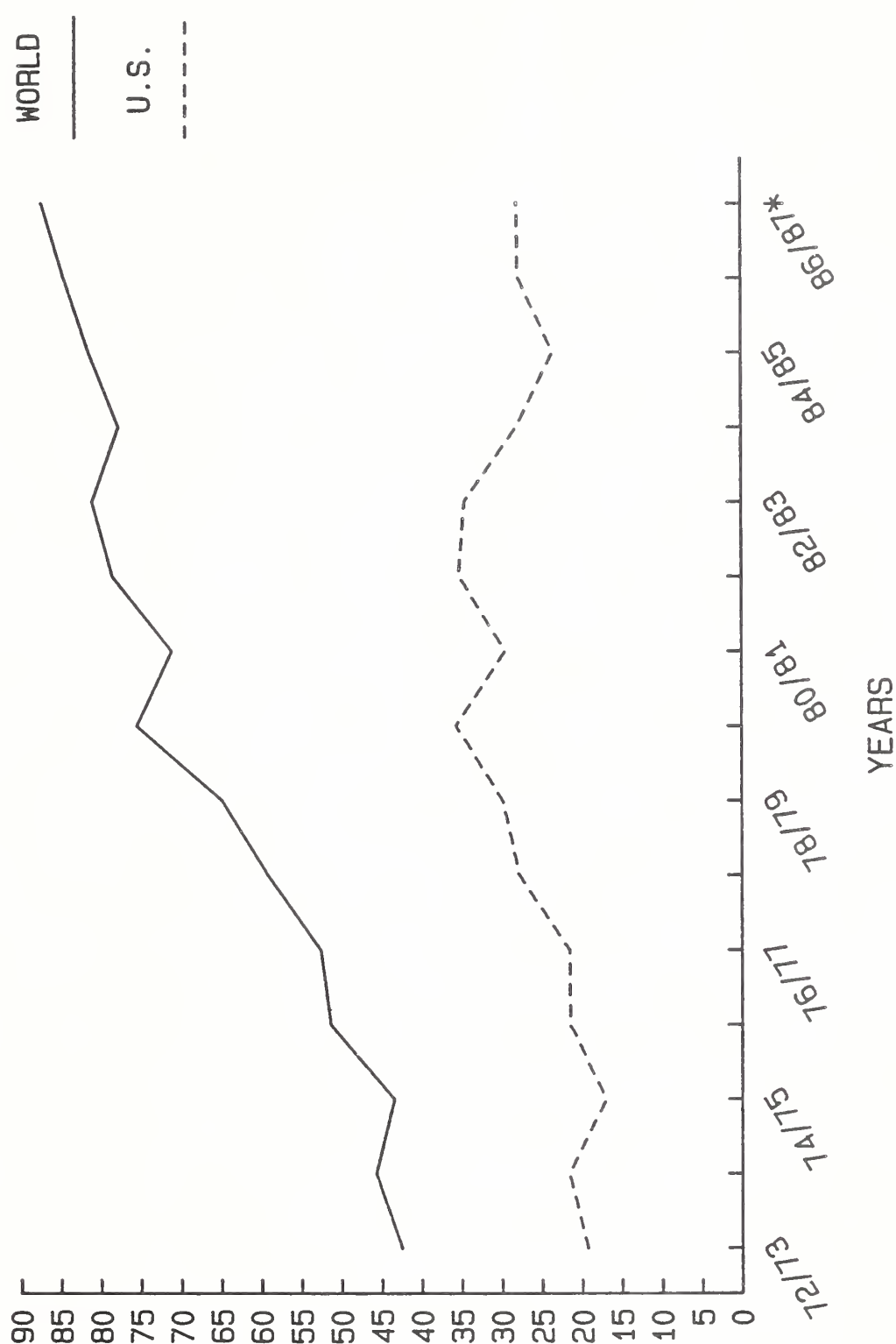
*ESTIMATED

WORLD AND U.S. OILSEED PRODUCTION (MMT)



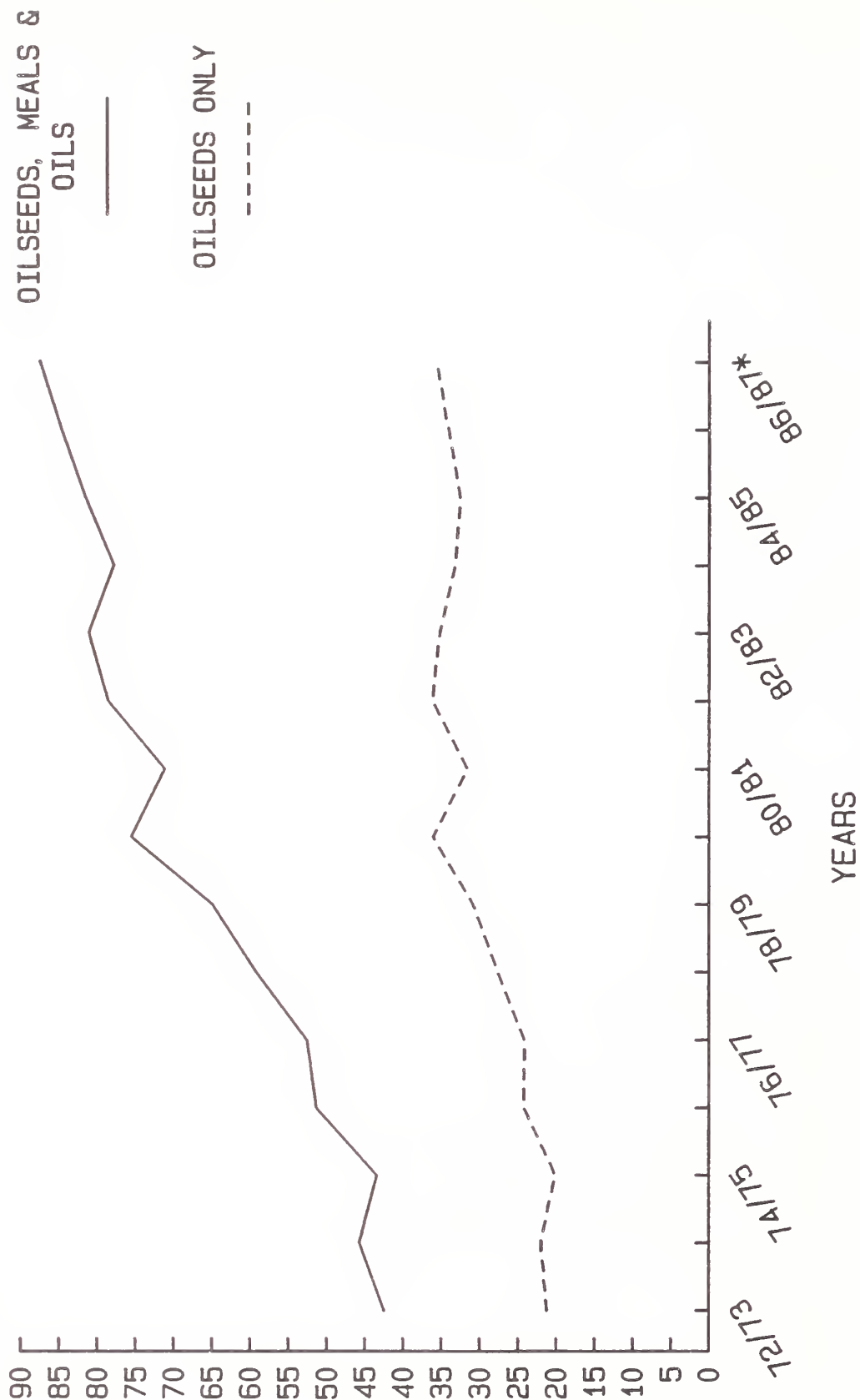
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WORLD AND U.S. OILSEED AND PRODUCT EXPORTS (MMT)



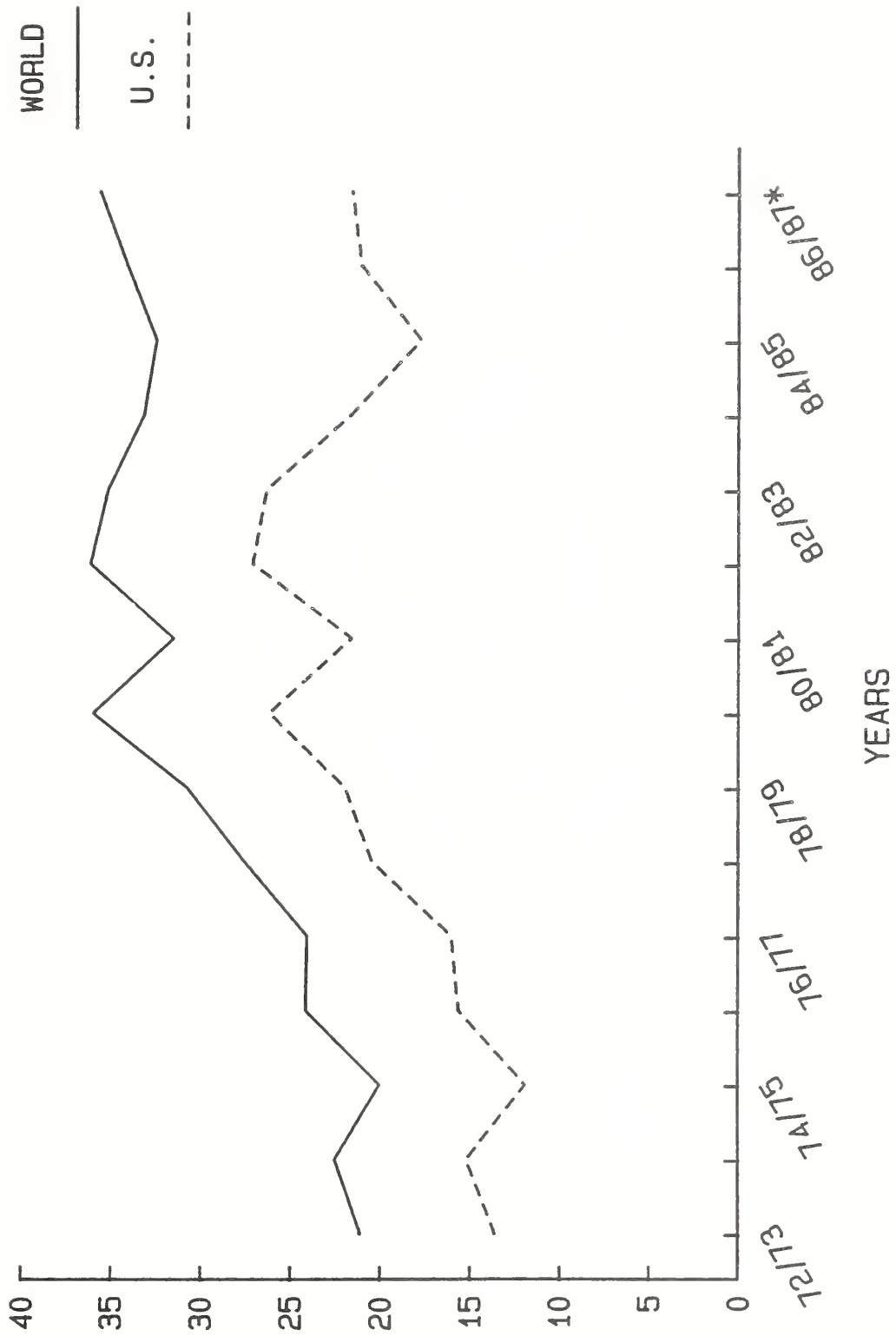
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WORLD OILSEED AND PRODUCT EXPORTS (MMT)



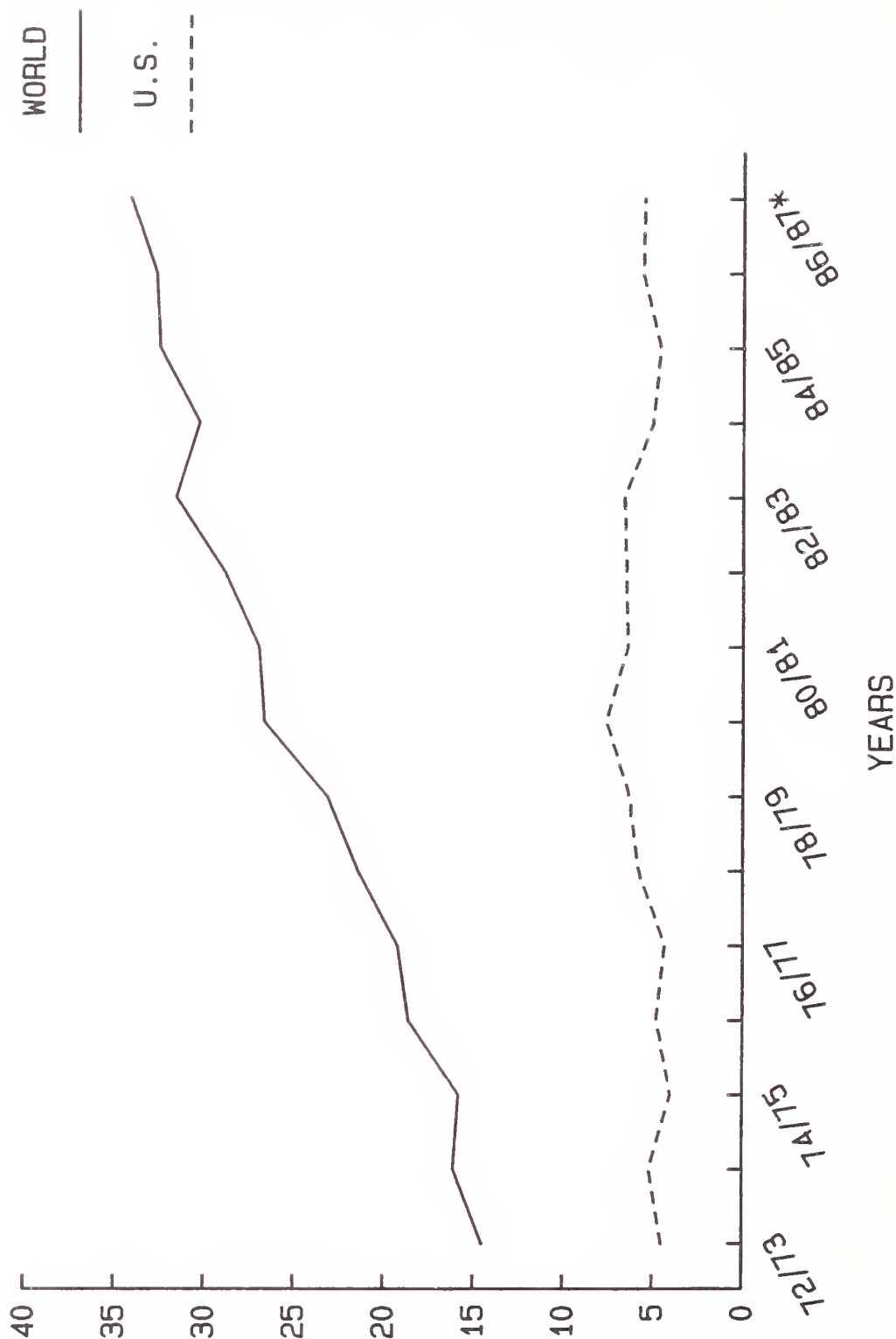
*ESTIMATED

WORLD AND U.S. OILSEED EXPORTS (MMT)



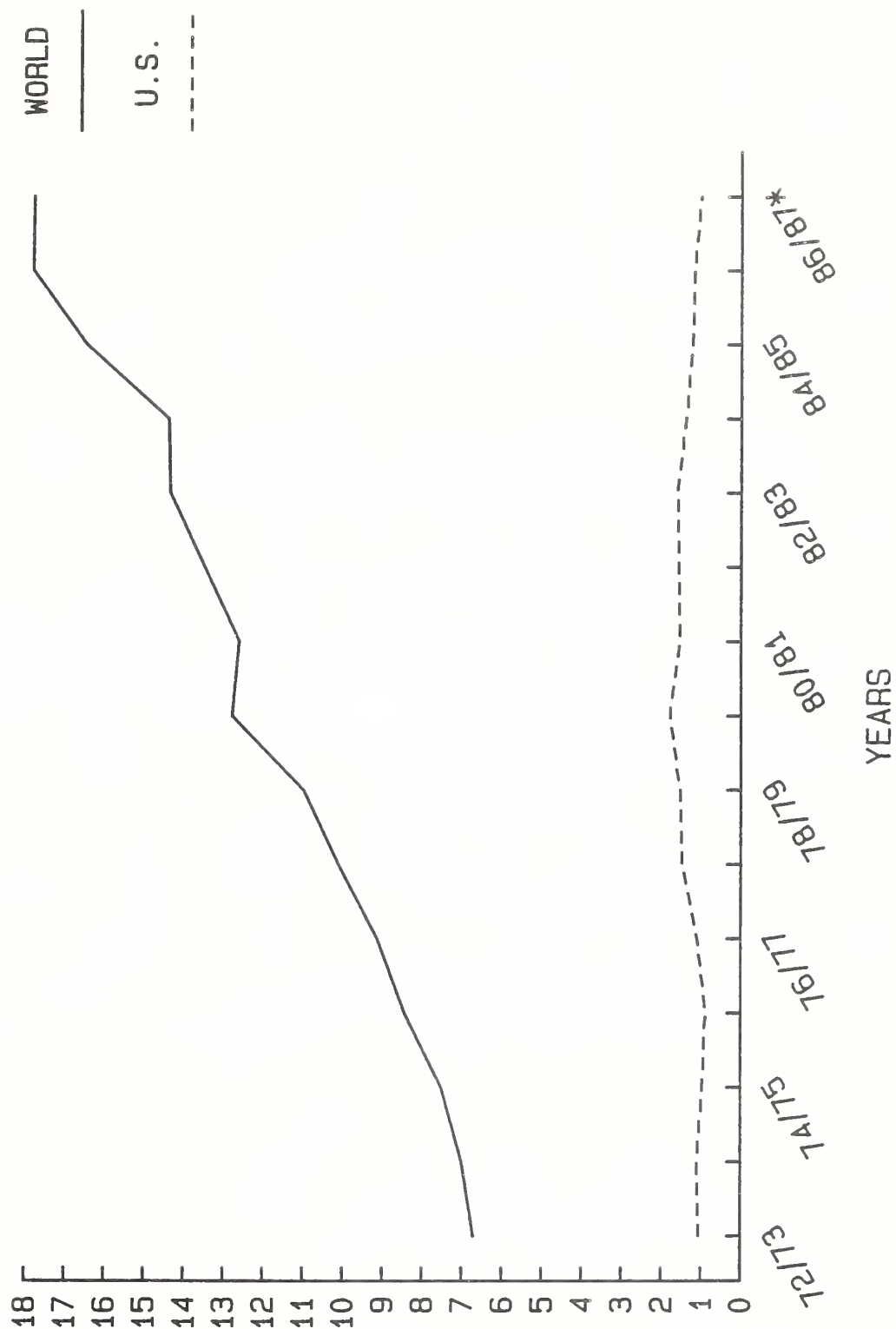
*ESTIMATED

WORLD AND U.S. PROTEIN MEAL EXPORTS (MMT)



*ESTIMATED

WORLD AND U.S. VEGETABLE OIL EXPORTS (MMT)



*ESTIMATED

ANNUAL AGRICULTURAL OUTLOOK CONFERENCE

United States Department of Agriculture
Washington, D.C.



MARKET TRENDS IN EDIBLE FATS AND OILS

Siegfried Mielke

Editor of OIL WORLD, ISTA Mielke GmbH, Hamburg

When the prices for palm oil and many oilseeds had slumped to and partly below production costs last spring and summer many people believed that a long period of structural surpluses in edible oil raw materials and of prices persistently below production costs had begun. This belief already has proven wrong or will do so in the course of the next twelve months. In my assessment the slump was no more than a cyclical low, though an unusually deep one.

During the next two seasons the following factors will be prominent in shaping the market situation and prices for edible oils and fats, and I will analyse them in this order:

- 1) The demand for, and the resulting production of, oil-meals as it is an important factor determining the production of seed oils.
- 2) The production of raw materials, namely oilseeds and palm oil.
- 3) The demand for oils and fats.
- 4) The development of edible oils and fats stocks and stocks/usage ratios.

Meal demand is expected in this analysis to slow this season but to pick up in 87/88. As this subject will be dealt with in greater detail in the next paper I just touch it very briefly here.

For this season I expect the production of the eight major meals to rise only by 1.6%. This will decisively help to keep seed oil production below demand and thus to reduce stocks, just as in 84/85 the 8% increase in meal demand had been the most important single factor in generating the sharp increase in seed oil stocks.

However, as we will see later, I expect 1987/88 to be one of the few seasons when crushings of oilseeds -- especially of soybeans -- will be geared primarily to oil demand. The resulting production of the seven major oilseed meals plus fish meal is expected to rise by 3.1%, i.e. at double the rate of this season. This production may have to enforce its way into consumption by relatively low prices (Table I).

World oilseed production is expected to remain high this season but to decline slightly in 87/88. As this subject has been discussed in the previous paper I mention it only briefly here as it emphasises my cycle theory. Also, the oilseed crops largely are the basis for my crush and seed oil production figures.

For this season we expect world production of the ten major oilseeds to set a new record at around 193 mill.T and to remain above disappearance for the third year in a row. However, for 1987/88 we presently expect world oilseed production to decline by 2.5% to 188 mill.T. Low prices and profitability as well as high stocks are expected to result in a further reduction of world cotton plantings and of oilseed plantings in those countries where oilseed stocks are high and prices low -- especially in North America. In addition there is a statistical probability that oilseed yields could be affected by adverse weather next year in several important producing countries.

At the same time the demand for oilseeds is likely to become stronger in 87/88 as a tightness of vegetable oils is developing and crushings will be geared to oil demand. Thus total world disappearance of oilseeds (including non-crush uses) may exceed production by over 6 million tonnes and oilseed stocks be reduced by this amount. It is therefore possible that US soybean stocks decline to 400-440 mill.bu by 1 September 1988. Details are shown in Table 2.

Graph 1

Thus, after three years of surpluses the world oilseed cycle is again likely to turn into a deficit in 87/88. The history of the world oilseed cycles since 1976/77 shows that the period of surplus never lasted more than three years. (See also Table 2)

Likewise there is a cycle in world palm oil yields and that is turning downward this season and next. It is due mainly to the "preceding yield factor", which is unknown in oilseed cultivation but typical for many tree crops. The reduction of fertilizer application since January 1986 will additionally affect the yields in 1987 and even more so in 1988. Furthermore in certain periods of this and next season the palm oil yields will be affected by adverse weather one, two and/or three years before the harvest. (The shortage of time prohibits more discussion of the palm oil yield and acreage prospects, but more details can be found in the OIL WORLD issues of July 11 and August 1, 1986.)

As a result I expect Malaysian palm oil production, despite the continuing substantial expansion of the mature area, to decline by 0.5% this season and to show only a moderate increase of 4% next season. Both rates are contrasting drastically with the increases of 25% last season and 15% in 84/85. And we expect world production of palm oil to rise only by 2% this season and 6% in 87/88. This follows a sharp increase of 19% (1.2 mill.T) last season and one of 11% in 84/85. Along with palm oil, also the production of kernel oil will slow similarly this season and next.

Graph 2

The incessant and steep increase in world palm oil production is shown in Graph 2 but this Graph also indicates that in two out of the past ten seasons world disappearance exceeded production significantly, so that stocks declined correspondingly. Such a situation is in prospect again for 87/88.

The combination of a slow increase in meal consumption (and thus seed oil production) and a marked flattening of the uptrend in palm oil output means that the rate of increase in world production of the ten edible oils and fats included in this analysis will slow pronouncedly this season and next. For this season we expect it to be only 2% and for next season a little over 3%. This is only one half to one quarter of the rates of increase registered in the past two seasons.

Apart from the slowing of the increase in palm and palmkernel oil production the outstanding features for this and next season are the prospective declines in cotton, coconut and fish oils (the latter two at least this season) and the slowing of the uptrend in sunflower oil output. Except for cotton oil, all this is in clear contrast to the situation in 84/85 and/or 85/86, which was characterized by huge increases in production.

Therefore the biggest increase this season will have to come from soybean oil (by about 450000 T or over 3%) and rapeseed oil (by about 340000 T or 5.5%). Next season we expect the increase to be even sharper for both oils.

As a consequence, the world soybean industry — a stepchild of our market during the past three seasons -- will experience a revival this season and especially in 87/88. After a dramatic doubling of its throughput in both the sixties and the seventies, the uptrend slowed in the early eighties and virtually came to a standstill in the past three seasons. The strong competition from other oilseeds, feedstuffs and vegetable oils, coupled with the world's economic problems (slower GNP growth, debt crisis and strong dollar) just strangled it.

We now expect the growth of world soybean crushings to be resumed with 4% this season and 5% next season. These rates of increase are less than one-half of what they were in the past two decades, it is true, but they compare favourably with the stagnation during the past three seasons taken as a whole. It will also be the first time since the 82/83 season that the rate of increase will be better for soybeans than for the competing oilseeds, taken as a group.

Let us now turn to the oil demand which can be as important as supply in generating change in the market situation. Demand for edible oils and fats is depending mainly on population growth, disposable income, credit and foreign exchange availabilities, and prices. Population is the least erratic factor: Its growth rate is slowing but fractionally to 1.6% this and next season from 1.7% in the past nine seasons.

World economic growth has been improving since 1983, after the deterioration in the early eighties. It is expected by the international agencies to continue to improve further in 1987. Real disposable income has shown a better rise last and this calendar year as fuel prices have declined sharply, leaving more disposable income available for food including oils and fats. In the developing and East Bloc countries the credit and debt situation has improved in that the interest rates have declined significantly.

Most importantly, the prices for edible oils and fats themselves have declined sharply since the highs reached in early 1984. By early 1986 they had fallen to the lowest level in more than ten years. While this troubled producers it pleased consumers. Together with the other factors it caused a sharp increase in per caput and total disappearance of oils & fats during the past two seasons. In 1984/85 total world disappearance of the ten edible oils and fats rose by over 2.2 mill.T and last season even 2.8 mill.T. This was the largest increase that has ever been achieved. An abundant supply creates its own demand.

Although prices for lauric and palm oils rose sharply this autumn and those for most other edible oils and fats have followed at some distance, I believe that the increase in demand could even exceed 2.8 mill.T this season owing to the following three reasons:

1) The extremely low prices ruling between March and August of this year caused many consumers throughout the world to increase their cover well into 1987.

2) Despite the rise during September and October the prices for all edible oils and fats other than lauric oils still are more less sizeably below the level of last autumn.

3) If my present expectations materialize and prices rise moderately but persistently from early 1987 onward many consumers throughout the world might decide to build invisible stocks in the course of this season to take precautions against a potential tightness in 87/88.

In 1987/88, however, the situation will be different. Owing to the developing tightness of oils and fats, prices probably will rise more sharply, affecting both demand and actual consumption. The effective demand in the market place will be additionally slowed by the growing tendency among consumers to reduce the invisible stocks accumulated in 85/86 and especially this season. As a result of all this world disappearance of the ten edible oils and fats may rise only by less than 2 mill.T and per caput disappearance only by 0.2 kilos. This will be below the average annual increase of 2.1 mill.T registered in both the previous five and ten years. And it will be almost a million tonnes less than the increase expected for 86/87.

The breakdown by commodity shows a continuous rise of the market share of palm oil. But also the share of rapeseed oil will rise substantially. Soybean oil's market share decline will be slowed this season when it is expected to reach 26.6%. It once had been a record 31% (in 78/79). For the 87/88 season, however, I expect it to recover temporarily to about 27.5%.

Graph 3

Graph 3 shows the development of world disappearance by major oils and fats. Between 76/77 and 87/88 only palm and palmkernel oil as well as sunflower and rape oils are able to increase their market share (rape oil even more sharply than palm oil). The shares of all other oils and fats including soya are declining over this period, though soya increased up to 78/79.

Graph 4

The recent three-year cycle of production deficits and surpluses of edible oils and fats versus disappearance appears to remain intact as 86/87 will most probably be again a deficit year. The last deficit years were 83/84 and 80/81. We now expect a deficit to occur in two consecutive years, namely this season and next. They may be particularly large at a combined 1.2 mill.T.

Consequently I expect the total stocks to decline by about 300000 T in the course of this season and another 650000 T next season. However, the stocks will not start to decline until from January/March 1987 onward. In the present quarter we are still experiencing a sharp seasonal increase.

Graph 5

This Graph shows above all two things:

1) There is a clear-cut seasonal pattern, namely an increase in October/December and a decline either from January/March or from the April/June quarter onward. The only exception was 84/85 when the stocks increased in July/September.

2) Although stocks will begin to decline next quarter, we will not come out of the record stocks situation until from April/June 1987 onward. That is, for the ten edible oils as a whole the removal of the surplus stocks will not begin until the second half of this season.

Graph 6

More important as a measurement of ampleness or tightness is the stocks/usage ratio. Graph 6 shows the development of the season's ending stocks of the ten edible oils and fats as a whole and of soyaoil, palm oil and laurics individually since 1976/77 with projections for this and the next season.

This graph shows above all the following:

a) There is generally a three-to-four-year cycle for all oils and fats taken as group and usually also for the major individual oils. Some exceptions from this rule are possible.

b) The stocks/usage ratio invariably is the highest for palm oil. This is because October 1, the date used in this analysis, is in middle of the peak production period. It is also because over nine tenths of the Malaysian production is exported, and that in some processed form. This extends the time between the date of crude oil production and that of processed oil export shipment. For soybean oil the stocks/usage ratio is much lower because the raw material can be stored and most of the oil is exported in the crude form. Also, in the big soybean oil producing countries a relatively large share of the production is consumed at home.

c) The present cycle for the whole group of 10 oils and fats, which generally began in 83/84, peaked last season and is turning downward from this season onward. I expect the decline to continue and partly accelerate next season. The present cycle will probably end with the expected low in the autumn of 1988.

The prospects beyond 87/88 point to the development of new surpluses. This time they may become structural, i.e. last longer than just three or four years, if the Indonesian Government carry out their just revised oil palm expansion plan.

Originally Pelita (plan) IV targeted new plantings of an average 177000 ha from 1984 onward annually in order to reach 1.31 ha by the end of 1988. I estimate that in the first three years (1984 to 1986) only about three fifths of the plan was implemented, i.e. about 100000 ha annually. The revised plan calls for an increase in new plantings by 1 mill. hectares between now and March 1989 to 1.7 million hectares. If three-fifths of the revised plan is reached, the total planted area would reach about 1.35 mill.ha by March 1989, i.e. about 400000 ha more than we have projected so far. That would mean about 1.2 mill. T more palm oil in 1992 than we have projected in our high-case forecasts so far, which already indicated a surplus situation. And that situation would begin to materialize already several years earlier.

In addition, after the expected decline during the next two years, Malaysian yields per hectare are likely to pick up again in 1989 and 1990 if rainfall averages at least normal during the next two years. From 1990 onward the acceleration of Indonesian plantings will begin to be felt in actual production, too. At the same time the expected high prices and profitability are likely to result in expanded oilseed plantings in 87/88 (for 1988 and 1989 harvests) throughout the

world, especially in the major exporting countries of North and South America. And there can be little doubt that the EEC, India and China will continue to expand their oilseed production, aided by artificially high oilseed prices.

All this could result in a longer surplus period from the end of this decade onward than the two to three years we have normally seen in the past.

Graph 7

What will all this mean for edible oil prices? I believe that the rally we have seen during the past three months represented mainly a correction of the overdone slump experienced earlier this year. But the rally, in turn, might have been overdone by early November. I expect prices generally to lose some ground during the last two months of this calendar year and maybe into January 1987 although I have become less sure about it since last week. From February or March onward (possibly already from this week or January on?) a new gradual recovery could start and persist through most of the remainder of this season with short interruptions especially during August and September. This rise is expected to take place with more or less steady prices for soybeans and other oilseeds, i.e. it will be strength at the expense of meals.

For 1987/88, however, I expect general and sharper price rises under the lead of oils. That is, also the prices for soybeans and other oilseeds are likely to advance sizeably and at the same time the rise of the oil share of the combined product value should continue. In other words, edible oil prices should rise more sharply than those for oilseeds, and meal prices less sharply than oilseeds -- all in dollar terms.

Table 1

8 MAJOR OILMEALS: World Production (1000 T)

	O c t o b e r / S e p t e m b e r						
	<u>87/88F</u>	<u>86/87F</u>	<u>85/86p</u>	<u>84/85</u>	<u>83/84</u>	<u>82/83</u>	<u>81/82</u>
Soybean meal...	66875	63742	61709	59670	57142	62169	58927
Cotton meal....	11660	12183	13263	14441	11652	11052	11439
Groundnut meal.	4730	4756	4444	4586	4473	4077	4740
Sunflower meal.	8260	8361	8199	7746	6788	7027	6166
Rapeseed meal..	11280	10571	10121	9404	8388	8269	7443
Copra meal.....	1855	1850	1904	1378	1280	1553	1629
Palmkernel meal	1430	1354	1312	1128	939	946	827
Fish meal.....	5800	5724	5896	5816	5604	5009	5214
Total.....	111890	108541	106848	104169	96265	100103	96385

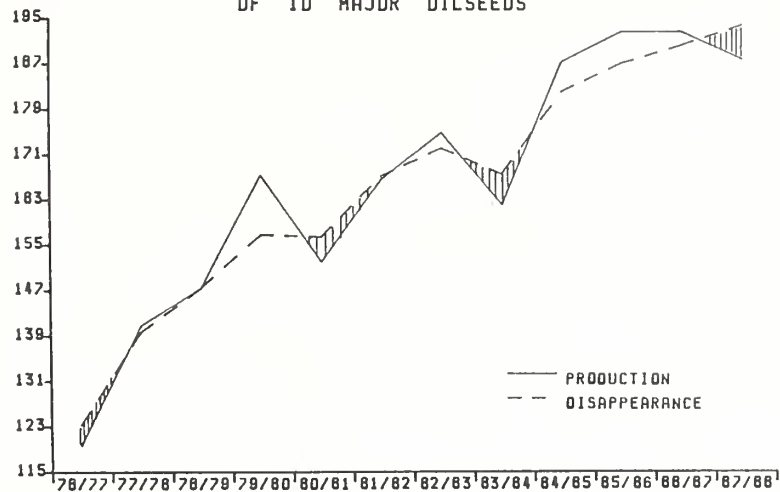
Table 2

OILSEEDS : Major Stocks, World Production and Disappearance (1000 T)

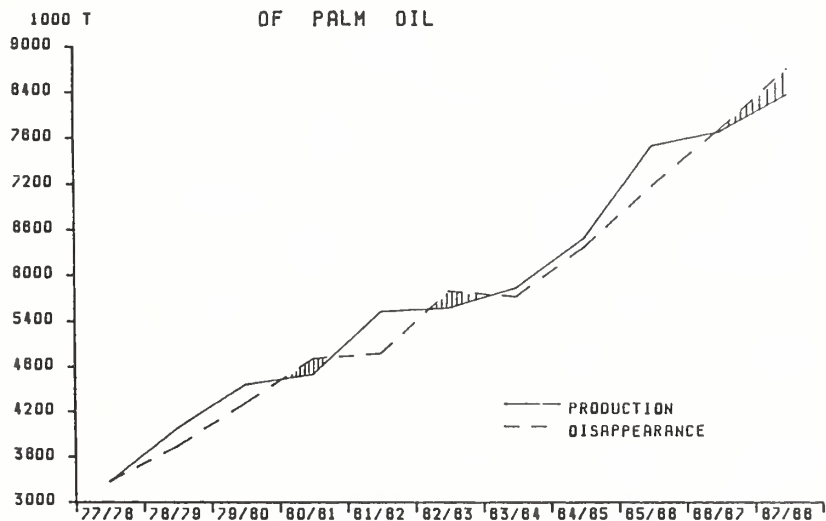
Major Opening Stocks	87/88F	86/87F	85/86p	84/85	83/84	82/83	81/82	80/81	79/80	78/79	77/78	76/77
<u>SOYBEANS</u>												
France, Sep 1....	70*	55*	62*	67*	56*	60*	51*	50*	48*	51*	45*	40*
Greece, Sep 1....	20*	25*	23*	19*	4*	30*	9*	13*	7*	10*	8*	5*
Italy, Sep 1....	95*	77*	42*	36*	77*	85*	47*	130*	135*	125*	75*	80*
Spain, Sep 1....	125*	80*	130*	120*	105*	90*	110*	200*	148*	151*	180*	230*
Other EEC, Oct 1..	440*	383*	670*	526*	638*	388*	423*	697*	627*	436*	384*	545*
East Europe, Sep 1	50*	20*	46*	35*	72*	22*	63*	18*	30*	26*	34*	20*
U.S.S.R., Sep 1...	180*	204*	60*	50*	300*	50*	250*	300*	150*	300*	310*	150*
Canada, Aug 1....	170*	142	217	132	157	92*	142*	162*	122*	112*	122*	112*
U.S.A., Sep 1....	16400*	14595	8602	4782	9380	6926	8519	9756	4779r	4387	2801	6666
Argentina, Sep 1..	2850*	2575*	2240*	3250*	2320*	1720*	1050*	1450*	880*	1020*	730*	500*
Brazil, Sep 1....	4900*	4650*	5800*	5100*	4900*	5700*	6000*	6480*	3350*	4380*	6420*	4960*
China, PR, Aug 1...	150*	100*	0*	100*	30*	300*	0*	0*	0*	0*	0*	0*
Japan, Oct 1.....	350*	273	328	439	392	325	235	279	411	273	295	249
Oth, Sep 1.....	260*	200*	195*	270*	155*	130*	140*	135*	132*	128*	133*	120*
<u>COTTONSEED</u>												
U.S.A., Aug 1(a)...	250*	315p	368	105	336	709	361	960	472	741	257	184
China, PR, Aug 1...	100*	250*	1100*	700*	480*	220*	200*	0*	0*	0*	0*	0*
<u>GROUNDNUTS, SHELLED</u>												
U.S.A., Aug 1....	200*	278p	484	208	294	257	139	214	199	198	207	361
Argentina, Oct 1..	80*	124*	86*	103*	83*	130*	80*	68*	174*	96*	197*	160*
China, PR, July 1..	300*	600*	230*	120*	170*	190*	300*	150*	100*	0*	0*	0*
India, Oct 1.....	100*	80*	120*	100*	10*	240*	20*	50*	150*	200*	80*	200*
<u>SUNFLOWERSEED</u>												
U.S.A., Sep 1....	230*	250*	153r	71r	190	60	92	762	90	77	23	0
Argentina, Oct 1..	450*	770*	429*	390*	550*	500*	180*	300*	360*	440*	200*	500*
<u>RAPESEED</u>												
France, Jul 1....	15*	21r	.	14	25	9	20	44	2	20	0*	0*
West Germany, Jul 1	25*	55	31	1	15	.	6	18	23	.	13	.
Sweden, Jul 1....	13*	20*	18*	11*	2*	11*	11	46	45	17	10	15
Canada, Aug 1....	1400*	889	470r	120r	486	692	1328	1477	1068	325	199	1046
China, PR, June 1..	350*	400*	60*	130*	600*	360*	50*	200*	150*	0*	0*	0*
Japan, Oct 1(b)...	120*	112	108	53	135	117	114	117	61	39	48	43
<u>COPRA</u>												
Philippines, Oct 1	180*	175*	325*	50*	165*	200*	210*	190*	93*	110*	80*	123*
<u>LINSEED</u>												
Canada, Aug 1....	475*	281	144r	155r	467	259	344	587	392	470	212	381
U.S.A., June 1....	30*	21*	20*	44	82	52	70	127	66	135	76	124
Argentina, Nov 1(c)	15*	25*	11	39	61	43	12	31	20	38	70	38
Total	30393*	28045p	22572	17340*	22737*	19967	20576*	25011*	14284*	14305	13209*	16852
of which soybeans...	26060*	23379*	18415*	14926*	18586*	15918*	17039*	19670*	10819*	11399*	11537*	13677*
<u>World Production</u>												
SOYBEANS.....	94080	98159	96347	92061	82995	93708	06642	81127	93556	77537	72767	59453
COTTONSEED.....	27300	28130	30894	34657	26309	26440	27680	25180	25354	23216	24535	21904
GROUNDNUTS, SHELLED...	14160	13872	13628	13414	12593	11667	13415	10759	11589	12155	11152	10984
SUNFLOWERSEED.....	19150	19024	19530	17828	15483	16800	15123	13125	15480	13023	12980	10063
RAPESEED.....	19780	19853	18867	17059	14327	14913	12342	11145	10074	10737	7907	7166
SESAMESEED.....	2170	2212	2066	1941	1949	1793	2077	1713	1840	1854	1779	1657
COPRA.....	5200	5195	5186	4180	3511	4316	4553	4550	4443	4170	4735	4365
PALMKERNELS.....	2670	2519	2467	2099	1818	1762	1650	1400	1408	1288	1066	1179
LINSEED.....	2400	2911	2658	2418	2311	2728	2293	2269	2873	2574	3152	2325
CASTORSEED.....	1090	1016	1118	1037	944	922	919	780	899	907	773	694
Total.....	188000	192892	192761	187494	162240	175049	166694	152047	167517	147460	140845	119790
<u>Total Supplies.....</u>												
	218393	220937	215333	204834	184977	195016	187270	177058	181801	161765	154054	136642
<u>Disappearance(d).....</u>												
	194093	190544	187288	182262	167637	172279	167303	156482	156790	147481	139749	123433
of which soybeans...	98840	95478	91383	89372	86655	91040	87763	83758	84705	78117	72905	61593
oth.oilseeds...	95253	95065	95905	92890	80982	81239	79540	72724	72084	69364	66845	61840
<u>Ending stocks.....</u>												
	24300*	30393*	28045p	22572	17340*	22737*	19967	20576*	25011*	14284*	14305	13209*
of which soybeans...	21300*	26060*	23379*	18415*	14926*	18586*	15918*	17039*	19670*	10819*	11399*	11537*

(a)At mills only. (b)Including mustardseed. (c)At all positions, except on farms. (d)Including crush, seed, feed, direct food consumption, but also stock change, if any, in the other oilseeds and countries than those shown above.

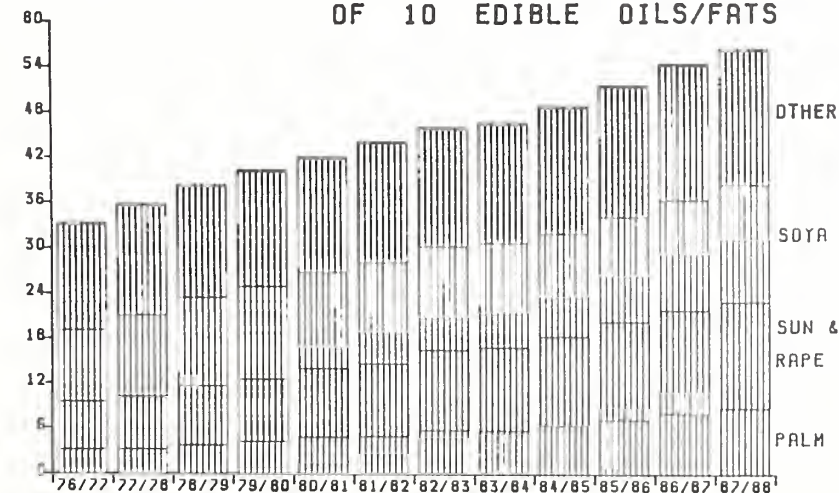
GRAPH 1 : WORLD PRODUCTION AND DISAPPEARANCE
MILL. T
OF 10 MAJOR DILSEDS



GRAPH 2 : WORLD PRODUCTION AND DISAPPEARANCE
1000 T
OF PALM OIL



GRAPH 3 : WORLD DISAPPEARANCE OF
MILL. T
OF 10 EDIBLE OILS/FATS



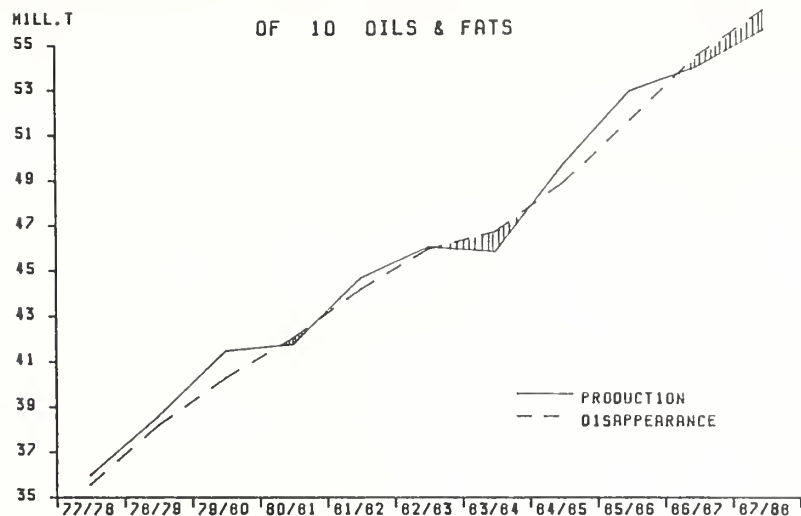
10 OILS/FATS: World Supply and Demand Balances (1000 T)

Table 3

	0	c	t	b	e	r	S	p	t	e	m	b	e	r
	87/88F	86/87F	85/86	84/85	83/84	82/83	81/82	80/81	79/80	78/79	77/78	76/77		
<u>Soybean oil</u>														
Opening stocks...	1531	1544	1315	1134	1680	1684	2010	1862	1335	1169	1027	1184		
Production.....	15350	14585	14132	13730	13270	13980	13177	13027	13066	11915	11042	9277		
Imports.....	3620	3322	3145	3755	4016	3582	3577	3435	3159	3013	2663	2137		
Exports.....	3650	3385	3121	3642	3952	3780	3505	3408	3270	2903	2719	2043		
Disappearance(a).	15550	14535	13928	13662	13880	13786	13575	12906	12428	11859	10843	9528		
Ending stocks....	1301	1531	1544	1315	1134	1680	1684	2010	1862	1335	1169	1027		
<u>Cotton oil</u>														
Opening stocks...	284	330	362	227	260	287	250	250	244	233	215	221		
Production.....	3120	3253	3558	3864	3116	3064	3234	2969	2997	2867	3045	2750		
Imports.....	270	289	344	361	309	392	523	491	395	389	404	359		
Exports.....	270	275	347	362	319	392	515	488	404	386	408	362		
Disappearance(a).	3150	3313	3586	3729	3139	3092	3205	2972	2983	2858	3023	2753		
Ending stocks....	254	284	330	362	227	260	287	250	250	244	233	215		
<u>Groundnut oil</u>														
Opening stocks...	352	353	314	270	277	369	200	280	342	293	345	358		
Production.....	3260	3296	3038	3137	3065	2806	3257	2442	2906	2978	2748	2893		
Imports.....	340	359	335	336	363	503	393	401	491	476	510	568		
Exports.....	340	360	338	337	334	502	423	377	483	483	514	539		
Disappearance(a).	3300	3296	2996	3091	3101	2899	3057	2547	2976	2922	2797	2936		
Ending stocks....	312	352	353	314	270	277	369	200	280	342	293	345		
<u>Sunflower oil</u>														
Opening stocks...	614	681	610	554	616	477	478	528	353	345	255	448		
Production.....	7100	7177	6986	6539	5836	6010	5242	4991	5129	4546	4367	3438		
Imports.....	2020	2095	2073	1755	1711	1439	1202	1198	1013	871	818	649		
Exports.....	2000	2082	1995	1844	1671	1511	1184	1171	1054	826	827	685		
Disappearance(a).	7150	7257	6994	6395	5937	5800	5261	5068	4912	4583	4269	3595		
Ending stocks....	584	614	681	610	554	616	477	478	528	353	345	255		
<u>Rapeseed oil</u>														
Opening stocks...	583	660	602	457	647	568	467	364	331	301	261	215		
Production.....	7070	6609	6267	5783	5065	4960	4486	4106	3357	3295	2655	2813		
Imports.....	1480	1408	1327	1294	969	851	845	841	669	617	559	581		
Exports.....	1500	1377	1323	1314	988	826	821	873	658	632	506	625		
Disappearance(a).	7070	6717	6214	5618	5237	4906	4409	3970	3334	3250	2668	2724		
Ending stocks....	563	583	660	602	457	647	568	467	364	331	301	261		
<u>Coconut oil</u>														
Opening stocks...	491	603	356	326	430	478	464	477	383	325	328	355		
Production.....	3200	3191	3292	2373	2212	2668	2795	2776	2652	2579	2861	2737		
Imports.....	1450	1532	1531	1050	1143	1255	1319	1468	1135	1202	1225	1175		
Exports.....	1460	1457	1601	1126	1096	1304	1318	1392	1148	1160	1302	1101		
Disappearance(a).	3230	3378	2974	2267	2362	2667	2781	2865	2544	2563	2787	2837		
Ending stocks....	451	491	603	356	326	430	478	464	477	383	325	328		
<u>Palmkernel oil</u>														
Opening stocks...	177	194	124	96	104	116	101	117	81	65	82	72		
Production.....	1160	1097	1066	912	770	768	673	608	610	550	472	521		
Imports.....	800	746	688	581	477	541	436	386	387	337	268	273		
Exports.....	800	755	697	618	479	510	427	390	387	337	253	274		
Disappearance(a).	1200	1105	987	848	777	811	667	620	574	533	504	509		
Ending stocks....	137	177	194	124	96	104	116	101	117	81	65	82		
<u>Palm oil</u>														
Opening stocks...	1739	1696	1361	1231	1092	1321	857	1058	828	646	608	443		
Production.....	8410	7912	7728	6512	5853	5594	5535	4711	4574	3983	3281	3362		
Imports.....	7600	6976	6600	5642	4272	4259	3898	3605	3529	2877	2470	2341		
Exports.....	7500	6900	6787	5634	4244	4274	3977	3597	3553	2934	2429	2321		
Disappearance(a).	8700	7945	7206	6391	5741	5808	4991	4919	4319	3746	3284	3217		
Ending stocks....	1549	1739	1696	1361	1231	1092	1321	857	1058	828	646	608		
<u>Lard</u>														
Opening stocks...	288	290	288	287	310	283	303	308	300	285	290	270		
Production.....	5700	5573	5459	5396	5233	5073	4957	5024	4988	4667	4370	4236		
Imports.....	550	532	510	521	504	490	527	557	569	609	612	620		
Exports.....	550	526	504	530	504	497	521	560	566	598	606	624		
Disappearance(a).	5700	5582	5463	5387	5257	5038	4983	5026	4983	4663	4381	4212		
Ending stocks....	288	290	288	287	310	283	303	308	300	285	290	270		
<u>Fish oils</u>														
Opening stocks...	417	437	387	476	402	446	343	367	384	398	299	281		
Production.....	1500	1465	1545	1508	1475	1166	1334	1147	1216	1248	1188	1027		
Imports.....	980	970	870	1068	888	749	800	725	851	801	650	621		
Exports.....	970	944	906	1045	964	758	785	735	853	838	685	608		
Disappearance(a).	1540	1511	1459	1620	1326	1200	1246	1162	1231	1225	1054	1022		
Ending stocks....	387	417	437	387	476	402	446	343	367	384	299	281		
<u>GRAND TOTAL</u>														
Opening stocks...	6476	6787	5719	5059	5818	6030	5473	5611	4581	4061	3711	3848		
Production.....	55870	54158	53071	49754	45895	46088	44689	41801	41494	38628	36030	33055		
Imports.....	19110	18229	17424	16363	14654	14061	13520	13107	12197	11191	10179	9323		
Exports.....	19040	18061	17619	16450	14552	14352	13478	12991	12377	11098	10250	9182		
Disappearance(a).	56590	54638	51806	49007	46757	46008	44175	42055	40284	38202	35609	33333		
Ending stocks....	5826	6476	6787	5719	5059	5818	6030	5473	5611	4581	4061	3711		
Population (millions)														
July 1.....	5050	4969	4888	4809	4729	4651	4572	4494	4418	4344	4271	4198		
Per caput disapp.,														
kilos.....	11.2	11.0	10.6	10.2	9.9	9.9	9.7	9.4	9.1	8.8	8.3	7.9		

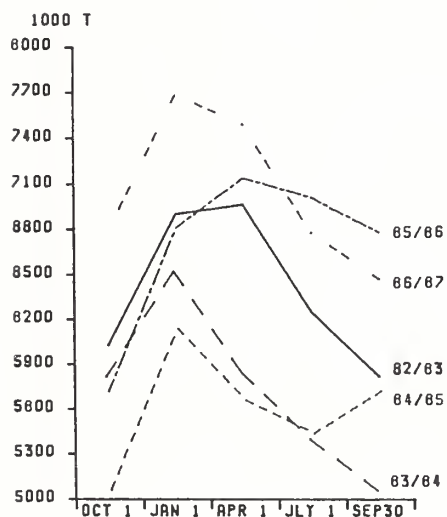
(a) Residual of the balance.

GRAPH 4 : WORLD PRODUCTION AND DISAPPEARANCE
OF 10 OILS & FATS

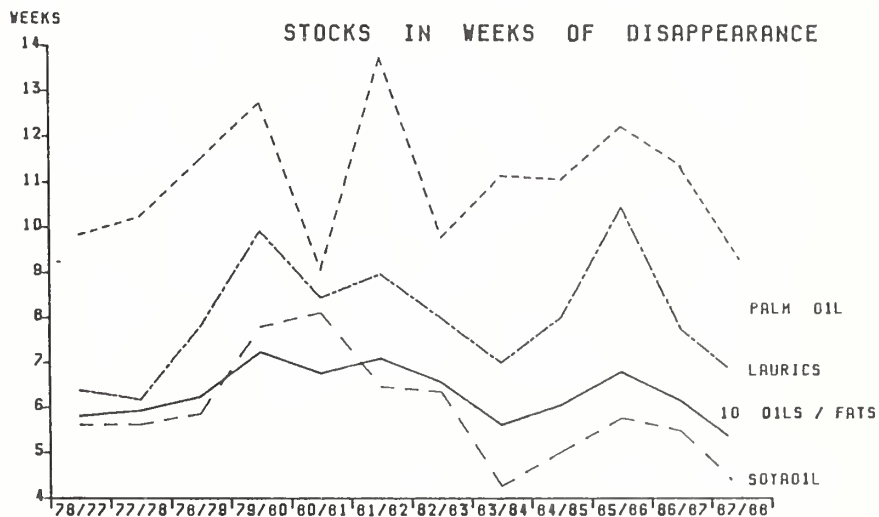


GRAPH 5 :

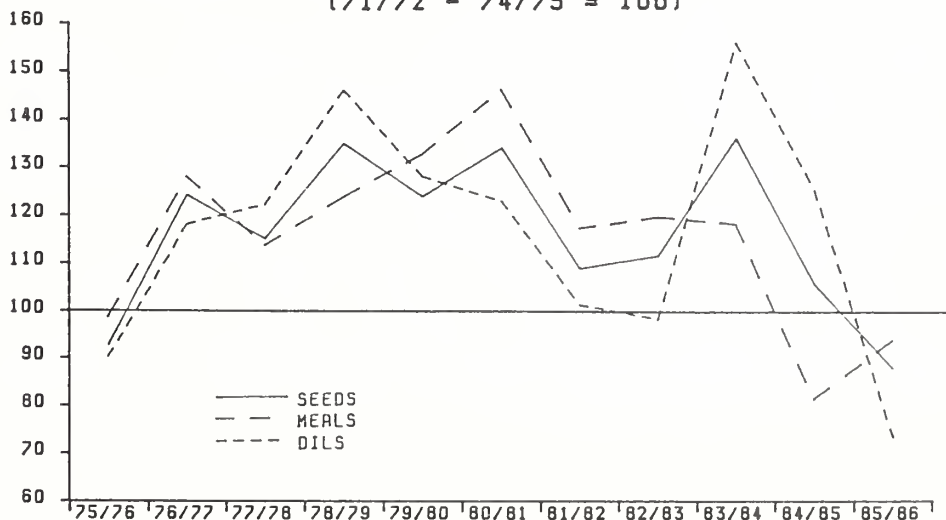
WORLD OPENING STOCKS
OF 10 OILS & FATS



GRAPH 6 : SOYAOIL, PALM OIL, LAURIC OILS AND
10 EDIBLE OILS/FATS -- SEASON'S ENDING
STOCKS IN WEEKS OF DISAPPEARANCE



GRAPH 7 : MAJOR OILSEEDS, OILS/FATS & MEALS:
ANNUAL "OIL WORLD" PRICE INDICES
(71/72 - 74/75 = 100)



ANNUAL AGRICULTURAL OUTLOOK CONFERENCE

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U.S. AND WORLD PROTEIN OUTLOOK

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Memphis, Tn.

SUMMARY

Soybean meal consumption in the U.S. will exceed last year's level by 4% with larger poultry numbers and excellent livestock/feed price ratios more than offsetting the negative impact of a high meal/corn price ratio. Foreign demand is expected to increase 4%. But following a excellent start, U.S. soybean meal exports will struggle to meet last year's rate in the last half of the year while soybean exports will fall sharply to end the year well below last year's level. Soybean prices will be locked in a relative narrow range between the loan rate and the CCC sales price with the products changing only marginally. Eventually the support price for soybeans will have to be lowered. Long term, the export outlook for soybeans is much less optimistic than that for grains. Indeed, under one scenario it is somewhat alarming.

US PROTEIN DEMAND

Those who view grain and protein meal as substitutes in rations have excellent reason to be pessimistic about meal demand this year. The meal/corn price ratio is at an extreme, exceeded only by that achieved in 1972-73 when soybean meal reached \$400 per ton. Theory would tell us that as meal prices rise relative to grain prices, less protein meal and more grain should be used into the ration.

However, proteins and grains are complements far more than substitutes. In every year since the 1972-73 run up in soybean meal and the following recovery year, year to year changes in soybean meal consumption have paralleled year to year changes in corn consumption, and in the last half dozen years the changes have been similar in degree as well.

Recognizing that grain and protein meal are complements, there are several factors that suggest a very strong protein meal demand in the US this year. The growth in poultry consumption brings with it the demand for a high protein ration. This year we expect broiler production to exceed year ago levels by as much as 8% in the April-June quarter (Table 3). Throughout

the livestock industry, high prices relative to protein meal prices are encouraging feed consumption. Since 1960 there has been only one other year when livestock prices relative to soybean meal prices were higher than that expected for this year.

Since grain accounts for the bulk of the ration, it is relevant to look at livestock prices relative to feed grain prices. While corn prices were sinking to new lows this summer, broiler prices were rising to new highs far above previous record levels. Hogs have also traded near the upper end of the price range of the past decade and cattle prices are currently moving in that direction. For the year we expect the ratio of livestock prices to corn prices to write history, being almost 40% above the previous record high level of the past two decades. This provides reason to be optimistic about US protein meal demand this year.

We utilize a model that takes these relationships into consideration for forecasting soybean meal consumption for the year. This model explains 96% of the year to year change in soybean meal demand. For 1986-87, it projects a significant increase in soybean meal demand, indeed more than we find comfortable believing. We are estimating soybean meal consumption up 4% from a year ago (Table 2).

WORLD DEMAND

While protein meal prices are relatively high on feed grain prices in the US, the opposite is true in the EEC. In West Germany, for example, the ratio of soybean meal to the corn threshold price is the lowest it has been in the past decade with the exception of one brief period in late 1977. Of course with locally produced wheat displacing US corn in the EEC ration, it is more relevant to look at the soybean meal/wheat price ratio. With the help of relatively low soybean meal prices plus the strong D-Mark, the meal/wheat price ratio is the lowest it has been in over a decade. We expect the demand for soybeans and soybean meal to be up 5.5% in Western Europe this year.

Elsewhere we see little change in protein demand. The import demand in Eastern Europe is expected up slightly but unchanged in Japan, Taiwan, and Korea. Mexican demand should be up somewhat, primarily because last year's import levels were so low following an excellent crop. Last year the PRC imported 261 thousand tons of soybeans from the US and Argentina. While this year we expect no imports, there were rumblings of inquiries last week. We leave USSR imports of soybeans and meal unchanged from a year ago, recognizing this as a major uncertainty.

Totaling these, we project world import demand for soybeans and meal from the US, Brazil, and Argentina to increase 4% in 1986-87 (Table 6).

US SOYBEAN AND SOYBEAN MEAL EXPORTS

Unfortunately the projected increase in world protein meal demand does not lead to larger US exports. Because of their drought last year, Brazilian

meal exports will be only 53% of year ago levels during October through January. This makes the US the primary store in town, and soybean exports are likely to be up 31% in September through November while meal exports will be up 24% in October-December and 10% in January-March.

That is the end of the good news. From February through August, 1987, Brazil's soybean exports will be 271% of last year's drought reduced level. During May, June, and July, Brazil's meal exports will be 138% of the year ago level. Consequently, it will be a struggle for US soybean meal exports to maintain year ago levels during the last half the crop year, and from December through September we expect US soybean exports to be 123 million bushels below the same period in 1985-86 (Tables 1, 2, and 5).

PRICE OUTLOOK

Undoubtedly the strong demand in the complex is supporting prices and could continue to do so for a while. But the upside potential is limited. The CCC would gladly part with the 275 million bushels of soybeans they are currently holding should the market choose to rally (unless the market rallies, most of the 190 million bushels of '85 crop loan beans will also be forfeited to the CCC). Even a Brazilian drought would probably not sustain prices at levels above the CCC sales price.

More likely, when demand declines after the first of the year and farmers become more willing sellers, prices will decline somewhat. But the downside potential is also limited. With 560 million bushels of soybeans currently tied up and still increasing, soybeans will have to be redeemed from loan later in the year. Cash country prices near \$4.80 and the futures there or a little higher should be sufficient to assure adequate free stocks of soybeans.

The relationship between meal and oil prices is more likely to be driven by developments in the oils than by any surprises on the protein side. As contrasted to the late summer period when world oils were at extremely depressed prices, there are reasons to believe that oil can account for a higher share of the product value, including a draw down in palm oil stocks, reduced coconut oil supplies, and after March, a draw down in US soybean oil stocks. However, the changes are marginal in terms of supplies, stocks, and prices. A substantial rise in the price of oils would seem to be dependent upon an unexpected surprise.

Although we expect few changes in the Food Security Act of 1985, we do believe there is a need to implement a mechanism to allow for lower soybean prices. The fact that soybean prices are historically high on corn prices will not cause an acreage shift in the United States because farmers are producing for the \$3.03 target price on corn, which is very attractive relative to \$4.77 soybeans. But producers in countries like Argentina or China who are looking at \$1.50 corn compared to \$4.77 soybeans will find the latter more attractive. The U.S. will increasingly find itself uncompetitive in the world oilseed market, this will become clear next spring and summer, as US soybean exports dwindle to minimum levels. While we do not expect a change in the program this crop year, we consider it only a matter of time before the program has to be changed. When that occurs, soybean prices will move to new lows and both oil and meal will participate in that decline.

LONG RANGE OUTLOOK

We have just completed a study that projects world production, consumption, and trade for the grains and oilseeds for 1990 and 1995. The results are most interesting. If the US is prepared to compete in world markets, by 1990, or shortly thereafter, exports of wheat, rice, and feed grains could match the record highs achieved between 1979 and 1981. Even with this expansion in US exports, however, cultivated area within the US will need to be restrained from those levels seen in the late 1970's through the mid 1990's. In addition the improved export outlook does not imply substantially higher commodity prices since world productive capability will still exceed projected demand.

Unfortunately the same optimistic outlook does not apply to soybeans or soybean meal. From 1973 through 1980, world protein meal consumption increased at an annual rate of 6.2%. From 1980 through 1984 that rate collapsed to 1.6%. From 1984 through 1995 we are projecting some recovery in the rate of expansion to 3.1% annually. Since much of this growth can be met by production within the importing countries, we project world trade to increase by 1.7% from 1984 to 1990 and by 1.2% from 1990 to 1995. Unfortunately the growth in South American production will be sufficient to meet that demand so US exports are likely to remain stagnant.

There are two very important assumptions in this soybean trade outlook. First we assume that Soviet protein meal demand will increase 2% annually. In 1985-86 the protein content of Soviet rations was 11.5%. This compares to 14% in the United States and 16.9% in the EEC. If the Soviets increased the protein of their rations to a level equivalent with the United States, and if that protein demand was met with soybean imports, their imports would rise by 7.6 million tons of soybeans. That is 40% of US soybean exports this year. While there is little reason to expect this policy change to take place, it represents a possibility.

While that prospect offers hope, the second assumption is extremely alarming. The high protein consumption in the EEC is a result of controls that hold their internal grain prices at levels far above world prices while proteins are imported and consumed at world prices. This makes protein extremely cheap on grains, stimulating the feeding of protein for its energy content rather than its protein content. If, in the face of extreme world competition, the EEC chose to lower grain prices or to tax protein prices so that the protein/grain price relationship equalled world levels, the 16.9% protein in rations could very well decline to the 14% level realized in the US (Table 8). If that occurred, the EEC import demand for soybeans would decline by 9.5 million tons (50% of U.S. exports). Consequently, just as the EEC grain policies helped make soybeans the miracle crop in the 1960's and the 1970's by stimulating extremely high protein use in rations, it is not inconceivable to believe that a change in those policies could create a real bust in the soybean complex during the next decade.

DMB:gb

Soybean Complex Balance Table, U.S.

	1976- 1977	1977- 1978	1978- 1979	1979- 1980	1980- 1981	1981- 1982	1982- 1983	1983- 1984	1984- 1985	1985- 1986	1986- 1987*	1987- 1988*
<u>Soybeans (mil. bu.)</u>												
September 1 Carryin	245	103	161	176	358	313	254	345	176	316	536	663
Production	1289	1767	1869	2261	1798	1989	2190	1636	1861	2099	2009	1852 3/
Total Supply	1534	1870	2030	2437	2156	2302	2444	1981	2037	2415	2545	2515
Crush	790	927	1018	1123	1021	1030	1108	983	1031	1052	1128	1090
Exports	564	700	739	875	724	929	905	740	598	741	669	725
Seed and Shrinkage	78	88	97	100	93	97	93	90	88	90	85	90
Other	-1	-6	0	-19	5	-8	-7	-8	4	-4	0	0
Total Usage	1431	1709	1854	2079	1843	2048	2099	1805	1721	1879	1882	1905
August 31 Carryout	103	161	176	358	313	254	345	176	316	536	663	610
1/ Under Loan	0	0	0	0	61	78	121	28	155	324	2/	
1/ CCC Ownership	0	0	0	0	0	0	25	1	1	130	2/	
<u>Crush October Crop Year</u>	773	946	1022	1129	1014	1030	1119	962	1042	1056	1131	1091
<u>Soybean Meal (000 tons)</u>												
October 1 Carryin	355	228	243	267	225	163	175	474	255	451	211	343
Production	18486	22368	24350	27102	24290	24645	26709	22772	24544	24962	26692	25750
Domestic	14053	16271	17717	19236	17586	17726	19302	17561	19433	19213	19975	19000
Exports	4560	6082	6609	7908	6766	6907	7108	5430	4915	5989	6585	6750
Total Usage	18613	22353	24326	27144	24352	24633	26410	22991	24348	25202	26560	25750
<u>Soybean Oil (mil. lbs.)</u>												
October 1 Carryin	1264	780	742	789	1225	1749	1113	1273	732	651	951	1545
Production	8578	10288	11324	12106	11271	10980	12038	10873	11453	11608	12310	11893
Domestic	7504	8257	8929	8963	9104	9530	9837	9585	9860	10097	10301	10150
Exports	1558	2069	2348	2707	1643	2086	2041	1829	1674	1211	1415	1150
Total Usage	9062	10326	11277	11670	10747	11616	11878	11414	11534	11308	11716	11300
* SCI Projections												

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1/ Quantities under loan or CCC ownership on August 31.

2/ As of August 27, 1986.

3/ Assumes 88% participation in the 1987 feedgrain program including a 20% voluntary and a 15% paid diversion. Also 88% participation in the wheat program with a 27.5% voluntary and no paid diversion.

Table 1

(SB-1)

SOYBEAN MEAL SUPPLY-DEMAND BALANCE SHEET, U.S., 000 short tons

YEAR	Oct	Nov	Dec	OND	Jan	Feb	Mar	JFM	O-M	Apr	May	Jun	AMJ	O-J	Jul	Aug	Sep	JAS	TOTAL
SOYBEANS CRUSHED (mil bu)																			
79	95.8	101.4	104.4	301.6	106.6	100.0	102.2	308.8	610.4	92.0	93.8	82.7	268.5	878.0	84.9	83.7	81.6	250.2	1129.1
80	97.8	98.5	94.1	290.4	92.2	79.6	88.7	260.5	550.9	85.4	82.3	73.4	241.1	792.0	72.4	74.6	75.4	222.4	1014.4
81	104.5	97.6	102.5	304.6	94.9	86.7	85.1	266.7	571.3	81.0	86.6	77.1	244.7	816.0	70.6	67.8	76.0	214.4	1030.4
82	100.2	108.1	111.9	320.2	110.0	93.0	94.6	297.6	617.8	81.8	83.7	81.5	247.0	864.8	81.6	85.7	86.6	253.9	1118.7
83	96.4	86.6	89.4	272.4	93.8	79.2	86.0	259.0	531.4	74.6	79.4	70.6	224.6	756.0	69.0	71.1	65.5	205.6	961.6
84	89.2	98.9	101.1	289.2	95.3	80.7	85.3	261.3	550.5	83.2	89.3	82.7	255.2	805.7	81.9	77.5	77.5	235.9	1041.6
85	94.3	96.6	100.7	291.6	99.6	81.4	91.7	274.7	564.3	84.4	86.3	79.6	250.3	814.6	83.1	78.4	79.5	241.0	1055.6
86*	107.0	109.0	110.2	326.1	108.3	87.1	90.7	286.0	612.2	92.2	86.9	85.6	264.6	876.8	86.9	84.7	82.6	254.2	1131.0
MEAL PRODUCTION																			
79	2286	2433	2506	7225	2555	2400	2454	7409	14634	2203	2247	1986	6436	21070	2058	2012	1962	6032	27102
80	2326	2366	2249	6941	2217	1905	2106	6228	13169	2046	1965	1765	5776	18945	1734	1788	1823	5345	24290
81	2491	2326	2451	7268	2269	2077	2052	6398	13666	1930	2066	1845	5841	19507	1684	1620	1834	5138	24645
82	2382	2581	2678	7641	2628	2221	2259	7108	14749	1950	1993	1956	5899	20648	1933	2053	2075	6061	26709
83	2315	2035	2122	6472	2220	1872	2029	6121	12593	1760	1872	1665	5297	17890	1631	1690	1561	4882	22772
84	2107	2326	2381	6814	2242	1894	2017	6153	12967	1958	2101	1953	6012	18979	1934	1831	1800	5565	24544
85	2199	2292	2376	6867	2344	1925	2160	6429	13296	2008	2058	1880	5946	19242	1977	1864	1879	5720	24962
86*	2525	2572	2600	7697	2555	2055	2140	6750	14447	2175	2050	2020	6245	20692	2050	2000	1950	6000	26692
DOMESTIC USAGE																			
79	1806	1920	1704	5430	1804	1463	1513	4780	10210	1567	1423	1425	4415	14625	1523	1638	1450	4611	19236
80	1857	1774	1628	5259	1563	1141	1136	3840	9099	1310	1362	1426	4098	13197	1466	1326	1597	4389	17586
81	1760	1688	1821	5269	1558	1140	1474	4172	9441	1269	1286	1471	4026	13467	1353	1292	1614	4259	17726
82	1766	1851	2035	5652	1508	1371	1491	4370	10022	1485	1548	1493	4526	14548	1458	1709	1587	4754	19302
83	1777	1370	1533	4680	1447	1329	1434	4210	8890	1402	1549	1435	4386	13276	1379	1489	1417	4285	17561
84	1870	1802	1694	5366	1744	1449	1490	4683	10049	1583	1575	1500	4658	14707	1605	1568	1553	4726	19433
85	1941	1619	1753	5313	1739	1337	1406	4542	9855	1485	1698	1431	4614	14469	1601	1435	1708*	4744*	19213*
86*	2020	1800	1715	5535	1725	1430	1540	4695	10230	1575	1650	1570	4795	15025	1650	1650	1650	4950	19975
EXPORTS																			
79	513	552	757	1822	807	930	881	2618	4440	661	751	558	1970	6410	569	379	550	1498	7908
80	452	453	752	1657	661	759	942	2362	4019	800	526	387	1713	5732	320	417	297	1034	6766
81	585	632	666	1883	674	928	713	2315	4198	679	643	458	1780	5978	347	347	235	929	6907
82	448	723	661	1832	1052	827	850	2729	4561	450	459	533	1442	6003	382	330	393	1105	7108
83	593	617	665	1875	688	572	581	1841	3716	400	315	266	981	4697	288	279	166	733	5430
84	256	474	636	1366	515	432	416	1363	2729	387	331	353	1071	3800	339	364	412	1115	4915
85	398	615	635	1648	590	619	649	1858	3506	608	378	453	1439	4945	404	340	300*	1044*	5985*
86*	500	735	800	2035	825	625	600	2050	4085	600	400	450	1450	5535	400	350	300	1050	6585
TOTAL DISAPPEARANCE																			
79	2319	2472	2461	7252	2611	2393	2394	7398	14650	2228	2174	1983	6385	21035	2092	2017	2000	6109	27144
80	2309	2227	2380	6916	2224	1900	2078	6202	13118	2110	1888	1813	5811	18929	1786	1743	1894	5423	24352
81	2345	2320	2487	7152	2232	2068	2187	6487	13639	1948	1929	1929	5806	19445	1700	1639	1849	5188	24633
82	2214	2574	2696	7484	2560	2198	2341	7099	14583	1935	2007	2026	5968	20551	1840	2039	1980	5859	26410
83	2370	1987	2198	6555	2135	1901	2015	6051	12606	1802	1864	1701	5367	17973	1667	1768	1583	5018	22991
84	2126	2276	2330	6732	2259	1891	1906	6046	12778	1970	1906	1853	5729	18507	1944	1932	1965	5841	24348
85	2339	2234	2388	6961	2329	2016	2055	6400	13361	2070	2030	1995	6053	19414	2005	1775	2008*	5788*	25202*
86*	2520	2535	2515	7570	2550	2055	2140	6745	14315	2175	2050	2020	6245	20560	2050	2000	1950	6000	26560
MEAL STOCKS, END OF MONTH																			
79	234	195	240		184	191	251			226	299	302			268	263	225		
80	242	381	250		243	248	276			212	289	241			189	234	163		
81	309	315	279		316	325	190			172	309	225			209	190	175		
82	343	350	332		400	423	341			356	342	272			365	379	474		
83	419	467	391		476	447	461			427	427	391			355	277	255		
84 1/	236	286	337		320	333	444			432	627	727			559	616	451		
85	311	369	357		372	281	386			301	283	279			251	340	211		
86*	216	253	338		343	343	343			343	343	343			343	343	343		

* SCI Projections

1/ For 84, stocks include reported stocks plus an estimate for unreported stocks. (SB-10)

Table 2

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ANIMAL UNITS AND FEEDING PROTEIN ANIMAL MATRIX
NUMBER FED AND ANIMAL UNITS (MILLION)
BY QUARTERS

	1984/85				1985/86				1986/87						
	OND	JFM	AMJ	JAS	YEAR	OND	JFM	AMJ	JAS	YEAR	OND	JFM	AMJ	JAS	YEAR
CATTLE ON FEED	11.3	11.7	10.6	9.5	43.1	10.1	10.7	9.7	9.3	39.8	10.2	10.7	10.1	9.6	40.6
ANIMAL UNITS	5.3	5.3	4.9	4.5	20.0	4.8	4.9	4.5	4.4	18.6	4.8	4.8	4.6	4.5	18.8
% CHG. L.YR.	7.4	6.4	2.8	-5.1	2.9	-9.0	-7.3	-7.4	-3.2	-6.8	0.2	-1.1	2.2	2.3	0.8
HOGS	27.4	26.9	20.2	33.8	108.3	26.6	25.6	18.6	31.2	102.0	25.3	25.0	18.9	32.4	101.5
ANIMAL UNITS	13.9	13.4	10.2	17.1	54.6	13.5	12.8	9.4	15.8	51.4	12.8	12.4	9.5	16.4	51.1
% CHG. L.YR.	-4.6	-1.4	0.1	-1.0	-1.8	-3.0	-4.8	-7.8	-7.6	-5.8	-5.2	-2.8	1.1	3.9	-0.7
BROILERS	1095.0	1163.2	1247.7	1220.7	4726.7	1150.4	1204.6	1288.2	1271.8	4915.1	1199.5	1282.7	1392.6	1355.5	5230.2
ANIMAL UNITS	11.0	11.6	12.5	12.2	47.3	11.5	12.0	12.9	12.7	49.2	12.0	12.8	13.9	13.6	52.3
% CHG. L.YR.	6.0	5.4	4.3	3.4	4.7	5.1	3.6	3.3	4.2	4.0	4.3	6.5	8.1	6.6	6.4
CHICKENS	68.3	57.1	57.5	63.4	246.2	61.5	61.5	65.8	69.2	258.1	64.7	61.7	65.7	69.9	261.9
ANIMAL UNITS	1.9	1.6	1.6	1.7	6.7	1.7	1.7	1.8	1.9	7.1	1.8	1.7	1.8	1.9	7.2
% CHG. L.YR.	13.8	-4.2	-15.4	-16.2	-6.4	-9.8	7.8	14.5	9.1	4.8	5.1	0.2	-0.2	1.0	1.5
HENS & PULLETS	283.0	282.5	274.0	271.6	1111.1	279.0	280.4	278.5	273.6	1111.4	280.0	282.7	280.7	275.7	1119.0
ANIMAL UNITS	5.9	5.9	5.7	5.7	23.3	5.9	5.9	5.8	5.7	23.3	5.9	5.9	5.9	5.8	23.5
% CHG. L.YR.	2.6	2.0	-1.1	-1.7	0.5	-1.4	-0.8	1.7	0.7	0.0	0.4	0.8	0.8	0.8	0.7
ALL TURKEYS	44.7	35.5	47.4	57.2	184.8	47.8	40.2	53.2	64.5	205.6	55.3	46.0	57.5	68.2	227.0
ANIMAL UNITS	5.4	4.3	5.7	7.0	22.4	5.8	4.8	6.5	7.9	25.0	6.7	5.5	7.0	8.3	27.5
% CHG. L.YR.	2.2	7.8	5.7	3.7	4.6	7.1	13.7	12.5	13.0	11.6	15.9	13.9	7.8	5.8	10.2
DAIRY CATTLE	10.8	10.8	11.0	11.1	43.8	11.2	11.1	11.0	10.8	44.1	10.6	10.5	10.3	10.2	41.6
ANIMAL UNITS	6.6	7.6	7.4	6.1	27.6	6.8	7.8	7.4	5.9	27.9	6.5	7.3	6.9	5.6	26.3
% CHG. L.YR.	-2.9	-1.5	1.3	2.5	-0.2	3.1	3.0	-0.2	-2.8	0.9	-4.8	-6.2	-6.1	-5.3	-5.7
OTHER CATTLE	91.6	91.6			91.6	88.4	88.4			88.4	84.6	84.6			84.6
ANIMAL UNITS	7.4	7.4			14.9	7.2	7.2			14.4	6.9	6.9			13.8
% CHG. L.YR.	-3.2	-3.2			-3.2	-3.2	-3.2			-3.2	-4.3	-4.3			-4.3
PR. CON. A.U.	57.3	57.1	48.0	54.3	216.7	57.1	57.2	48.3	54.3	216.9	57.3	57.4	49.6	56.1	220.4
% CHG. L.YR.	0.6	1.3	1.5	-0.1	0.7	-0.4	0.0	0.6	0.0	0.1	0.3	0.5	2.8	3.2	1.6
SCI PROJECTIONS															
SB008												Dec 1, 1986			

* SCI PROJECTIONS

SB008

Dec 1, 1986

Table 3

(SB-11)

BRAZIL SOYBEAN COMPLEX BALANCE TABLE, February-January 1 Year, 000 metric tons

	1976-	1977-	1978-	1979-	1980-	1981-	1982-	1983-	1984-	1985-	1986-	1987-	1988*
	1977	1978	1979	1980	1981	1982	1983	1984	1985	1986	1987*	1988*	
<u>Soybeans</u>													
Production	11226	12513	10200	10236	15171	14978	12834	14582	14977	18074	13149	17475	
Imports			80	253	421	990	1251	34	158	228	400	200	
Usage:													
Exports	3505	2588	658	637	1549	1423	500	1112	1581	3475	1199	3250	
Crush	6918	8355	9016	9043	12677	13973	12728	12873	12552	13792	11123	13200	
Seed	601	700	756	750	732	747	721	947	980	975	1000	1025	
Residual	299	475	11	336	-266	624	25	29	89	50	327	125	
Stock Change	-97	395	-161	-277	900	-799	111	-345	-67	10	-100	75	
<u>Soybean Meal</u>													
Production	5164	6712	6906	7038	9968	10635	9879	9963	9673	10631	8660	10279	
Usage:													
Exports	4288	5330	5371	5042	7212	8661	7984	7883	7687	8625	6449	7756	
Domestic Disappearance	878	1437	1789	1961	2438	1992	1845	2283	1966	1923	2316	2500	
Stock Change	-2	-55	-254	35	318	-18	50	-203	20	83	-105	23	
<u>Soybean Oil</u>													
Production	1233	1602	1653	1667	2463	2585	2392	2408	2343	2585	2088	2478	
Imports				129			22	42	145	107	177	145	
Usage:													
Exports	464	559	517	459	935	1147	911	940	917	906	348	612	
Domestic Disappearance	876	1025	1162	1303	1435	1549	1483	1581	1546	1746	1933	2020	
Stock Change	-107	18	-26	34	93	-111	20	-71	25	40	-16	-9	
* SCI Projections													

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1/ For soybeans, February-January year beginning February 1, 1976. Prior to this April-March year.
For products, March-February year beginning March 1, 1976. Prior to this April-March year.
February-January year beginning 1982-83.

Table 4 (SB-3)

BRAZIL SOYBEAN MEAL SUPPLY-DEMAND BALANCE (000 tons)

	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC	JAN	YEAR
SOYBEANS CRUSHED													
1982-83	556	940	1263	1578	1289	1216	1316	1138	1146	1044	794	447	12727
1983-84	689	1081	1462	1638	1485	1382	1360	1149	1117	804	425	281	12873
1984-85	421	970	1314	1578	1622	1401	1379	1200	1064	705	426	384	12464
1985-86	476	1007	1479	1700	1623	1596	1408	1216	1091	974	760	462	13792
1986-87	435	832	1303	1576	1241	1324	1325	1174	850*	500*	300*	263*	11123*
1987-88*	500	1000	1350	1700	1675	1600	1400	1200	1000	825	650	300	13200
PRODUCTION													
1982-83	438	721	974	1224	1010	940	1020	882	888	817	616	349	9879
1983-84	533	833	1134	1267	1151	1071	1055	889	864	623	326	217	9963
1984-85	328	752	1018	1226	1260	1087	1065	936	826	549	330	296	9673
1985-86	348	783	1133	1322	1244	1232	1088	931	847	753	589	361	10631
1986-87	339	646	1023	1230	965	1029	1030	912	660*	389*	233*	204*	8660*
1987-88*	389	779	1051	1324	1304	1246	1090	934	779	642	506	234	10279
DOMESTIC DISAPPEARANCE													
1982-83	94	182	134	4	254	333	74	469	258	-46	-16	105	1845
1983-84	142	144	230	391	307	252	93	154	140	143	195	92	2283
1984-85	165	147	176	204	134	59	243	88	232	260	157	101	1966
1985-86	41	185	258	123	111	46	224	154	136	214	232	199	1923
1986-87	193	168	225	195	228	182	121	278	200*	120*	202*	204*	2316*
1987-88*	200	185	225	195	225	100	235	205	230	250	230	220	2500
EXPORTS													
1982-83	287	574	676	1040	600	794	870	630	550	800	752	411	7984
1983-84	399	675	725	770	858	909	968	697	682	618	407	175	7883
1984-85	75	352	582	874	1070	1130	954	726	696	380	523	325	7687
1985-86	240	559	685	1091	1213	1105	861	762	810	467	496	336	8625
1986-87	164	440	688	975	745	749	796	767	685*	309*	71*	60*	6449*
1987-88*	140	475	685	1090	1215	1100	885	727	619	447	321	52	7756
TOTAL DISAPPEARANCE													
1982-83	381	756	810	1044	854	1127	944	1099	808	754	736	516	9829
1983-84	541	819	955	1161	1165	1161	1061	851	822	761	602	267	10166
1984-85	240	499	758	1078	1204	1189	1197	814	928	640	680	426	9653
1985-86	281	744	943	1214	1324	1151	1085	916	946	681	728	535	10548
1986-87	357	608	913	1170	973	931	917	1045	885*	429*	273*	264*	8765*
1987-88*	340	660	910	1285	1440	1200	1120	932	849	697	551	272	10256
STOCKS, END-OF-MONTH													
1982-83	501	466	630	810	966	779	855	638	718	781	661	494	
1983-84	486	500	679	785	771	681	675	713	755	617	341	291	
1984-85	379	632	892	1040	1096	994	862	984	882	791	441	311	
1985-86	378	417	607	715	635	716	719	734	635	707	568	394	
1986-87	376	414	524	584	576	674	787	654	429*	389*	349*	289*	
1987-88*	338	457	598	637	501	547	518	520	450	395	350	312	

* SCI Projections

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(SB-3.1)

Table 5

WORLD IMPORT DEMAND FOR SOYBEANS AND SOYBEAN MEAL IN SOYBEAN MEAL EQUIVALENT,
October-September Year, 000 metric tons 1/

	1981-82	1982-83	1983-84	1984-85	1985-86*	1986-87*
<u>Western Europe</u> 2/						
Soybeans	15532	14481	12750	12928	12131	12900
Soybean Meal	9399	10466	8766	10149	9764	10220
Total SBM Equivalent	21620	21859	18798	20321	19309	20370
<u>Eastern Europe</u>						
Soybeans	487	762	798	484	758	775
Soybean Meal	1981	1444	1951	2211	1812	1900
Total SBM Equivalent	2364	2044	2585	2592	2408	2510
<u>Japan</u>						
Soybeans	4303	4656	4482	4167	4520	4550
Soybean Meal	88	225	142	77	165	175
Total SBM Equivalent	3474	3888	3668	3356	3721	3755
<u>Taiwan</u>						
Soybeans	1064	1298	1380	1438	1505	1525
Soybean Meal	(a)	(a)	(a)	(a)	(a)	(a)
Total SBM Equivalent	837	1021	1086	1131	1184	1200
<u>Korea</u>						
Soybeans	493	732	735	768	1023	1050
Soybean Meal	(a)	(a)	(a)	(a)	(a)	(a)
Total SBM Equivalent	388	576	578	604	805	826
<u>Mexico</u>						
Soybeans	483	748	1745	1447	854	1100
Soybean Meal	33	202	69	93	84	80
Total SBM Equivalent	413	791	1442	1231	756	945
<u>U.S.S.R.</u> 3/						
Soybeans	1516	964	731	446	1519	1500
Soybean Meal	1094	2500	608	140	490	500
Total SBM Equivalent	2287	3258	1183	491	1685	1680
<u>P.R.C.</u>						
Soybeans	492	0	0	0	261	0
Soybean Meal	0	0	0	0	0	0
Total SBM Equivalent	387	0	0	0	205	0
<u>Others</u>						
Soybeans	2130	2358	2076	1746	1117	1270
Soybean Meal	2898	2863	3296	3201	3751	3800
Total SBM Equivalent	4574	4718	4929	4575	4630	4799
<u>TOTAL</u>						
Soybeans	26500	25999	24697	23424	23687	24670
Soybean Meal	15493	17700	14832	15871	16066	16675
Total SBM Equivalent	36344	38155	34269	34301	34703	36085

* SCI Projections

SB006

Nov 28, 1986

1/ Net exports from U.S., Brazil, Argentina, and Paraguay exports through Brazilian ports, September-August for soybeans, October-September for meal. U.S. exports are Census, adjusted for Canadian transshipments.

2/ Excludes soybean imports to be crushed for meal shipment to U.S.S.R.

3/ Includes 541 thousand mt of soybean meal imports from Western Europe in 1981-82, 1211 thousand mt in 1982-83, 218 thousand mt in 1983-84, 100 thousand mt in 1984-85, and 387 thousand mt in 1985-86.

(a) Included in Others, if any.

Table 6

(SB-8)

	U.S. (SB mil bu)		Brazil (000 mt)		Argentina (000 mt)		Paraguay (000 mt)		Total (000 mt)	
	84/85	85/86	84/85	85/86	84/85	85/86	84/85	85/86	84/85	85/86
SON										
Total SB Exports	153.4	166.5	219.0							
SB to USSR	0.1	0.0	0.0							
SB to PRC	0.0	0.0	0.0							
World Total	153.4	166.5	219.0							
Total SBM Exports	896	1425	1536							
SBM to USSR 2/	0	214	0							
World SBM Egv	4517	5141	6704							
DJF										
Total SB Exports	227.6	270.9	242.7							
SB to USSR	0.0	21.1	22.0							
SB to PRC	0.0	3.4	0.0							
World Total	227.6	270.9	242.7							
Total SBM Exports	1583	1844	2251							
SBM to USSR 2/	0	208	0							
World SBM Egv	6956	8030	7981							
MAM										
Total SB Exports	153.4	226.3	156.1							
SB to USSR	0.0	34.7	11.0							
SB to PRC	0.0	2.4	0.0							
World Total	153.4	226.3	156.1							
Total SBM Exports	1134	1635	1601							
SBM to USSR 2/	13	0	0							
World SBM Egv	4741	6977	5285							
JJA										
Total SB Exports	63.7	76.3	50.8							
SB to USSR	0.0	0.0	3.7							
SB to PRC	0.0	0.0	0.0							
World Total	63.7	76.3	50.8							
Total SBM Exports	1056	1197	1200							
SBM to USSR 2/	51	0	0							
World SBM Egv	2508	2998	2400							
YEAR										
Total SB Exports	598.1	740.0	668.6							
SB to USSR	0.1	55.8	36.7							
SB to PRC	0.0	5.8	0.0							
World Total	598.1	740.0	668.6							
Total SBM Exports	4669	6101	6587							
SBM to USSR 2/	64	422	0							
World SBM Egv	18722	23146	22370							

* SCI Projections

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1/ Soybean meal from Paraguay are not available but are believed to be negligible
 2/ Soybean meal shipments from Western Europe or U.S.

(SB-9)

Table 7

COMPARISON OF PROTEIN FEEDING IN THE US, EEC, AND USSR

	% Protein	EEC (mi.mt)				US (mi.st)				USSR (mi.mt)			
		1983-84	1984-85	1985-86	1986-87	1983-84	1984-85	1985-86	1986-87	1983-84	1984-85	1985-86	1986-87
Wheat	11	21.0	22.0	22.0	22.1	12.3	10.1	8.2	4.1	36.0	36.0	37.0	37.0
Coarse Grain	9	49.2	50.4	50.0	47.5	133.7	146.2	150.1	150.0	77.0	80.0	76.0	77.0
Total Grain		70.2	72.4	72.0	69.6	146.0	156.3	158.3	154.1	113.0	116.0	113.0	114.0
Other Feed		23.0	24.1	23.2	23.9	4.4	4.7	4.6	4.8	NA	NA	NA	NA
Soybean Meal	46	14.8	15.6	16.0	16.2	17.6	19.4	19.2	19.4	1.6	1.0	2.2	2.1
Cottonseed Meal	39	0.7	0.7	0.8	0.8	1.1	1.6	1.7	1.4	1.7	1.7	1.7	1.6
Groundnut Meal	47	0.3	0.2	0.2	0.2	0.1	0.1	0.2	0.1	0.0	0.0	0.0	0.0
Sunflower Meal	38	1.5	2.0	2.3	2.2	0.2	0.3	0.3	0.3	1.7	1.5	1.7	1.6
Rapeseed Meal	37	2.1	2.4	2.7	2.8	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Copra Meal	21	0.7	0.7	1.3	1.3	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Palm Kernel Meal	19	0.6	0.9	1.0	1.1	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Linseed Meal	33	0.7	0.7	0.7	0.7	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Fishmeal	66	0.6	0.9	1.0	1.0	0.6	0.8	0.7	0.8	0.5	0.7	0.7	0.7
Total		22.0	24.1	26.0	26.3	19.6	22.2	22.1	22.0	5.5	4.9	6.3	6.0
Total Feed		115.2	120.6	121.2	119.8	170.1	183.2	185.0	180.9	118.5	120.9	119.3	120.0
Protein Eq.		19.11	20.01	20.44	20.51	23.64	25.75	25.81	25.38	13.27	13.32	13.69	13.66
Protein Eq. As % Total feed		16.6%	16.6%	16.9%	17.1%	13.9%	14.1%	14.0%	14.0%	11.2%	11.0%	11.5%	11.4%
Reduction In Protein (EEC) Or Addition To Protein (USSR) Needed To Bring Protein Eq % To US Level In Sbm Eq (mi.mt) Sb Eq (mi.bu.)					7.5 350				0 0			6.0 280	
Reduction In Coarse Grain (USSR) Or Addition To Coarse Grain (EEC) Needed To Bring Protein Eq % To US Level In Sbm Eq (mi.mt) Sb Eq (mi.bu.)					7.5 268				0 0			6.0 214	

Table 8

ANNUAL AGRICULTURAL OUTLOOK CONFERENCE

United States Department of Agriculture
Washington, D.C.



Outlook '87, Session #9

For Release: Wednesday, December 3, 1986

1987 OUTLOOK FOR SUGAR AND SWEETENERS

Robert D. Barry
Economic Research Service

At a conference in October, I asked a speaker about the market potential of a product innovation. He replied that he was simply a scientist and could not respond to the economics. (Perhaps he was also well-schooled by his company!)

Today I shall address some facts, figures, and economics of sugar but, like that scientist, cannot foretell, or guess, future policy. And, of course, I don't know the U.S. sugar import quota! Still there is much we can discuss.

Let us start with a brief look at world market prospects for sugar. Then, we can go on to the U.S. sugar outlook and outline some of the pressures on the U.S. sugar program.

WORLD OUTLOOK

World sugar production tends toward surplus. When the surplus is burdensome enough, further production is discouraged. Consumption then starts to catch up with excess stocks and, should there be an unexpectedly large shortfall, a price spike occurs. Such is the typical sugar "cycle."

Is the recent strengthening of world sugar prices the start of a sustained price upswing? The evidence does not seem convincing. Stocks continue to be large and may be headed up again in 1987/88. To appreciate the possibility of a stock rise, let us look at production and consumption of 1986/87 and the last several years.

World centrifugal sugar production in 1986/87 is estimated by USDA at 100.1 million metric tons (MMT), raw value, up 2 percent from the previous year. The increase continues the trend of intended production in the 1980's. Since the record crops of 1981/82 and 1982/83, each at 101 MMT, world sugar output has declined twice, in 1983/84 and 1985/86. However, the declines were largely the result of poor weather, not intent.

World beet sugar output in 1986/87 is estimated at 35.7 MMT, down from 36.4 MMT, mostly from downturns in USSR and France. USSR output is currently placed at 7.7 MMT, a half-million down from last year, as a result of dry conditions. Drought also cut Eastern Europe's output by some 200,000 tons.

European Community production is estimated to drop 300,000 tons, as France's output fell by some 700,000 tons. However, EC farmers' returns have not been inadequate: Netherlands has a record output; Italy is up 250,000

tons, and West Germany is holding steady at 3.4 MMT, up from 2.7 in 1983/84 and 3.1 in 1984/85. U.S. production is also up, for both beet and cane sugar.

In world cane sugar output, we see not a cutback but a record output of 64.4 MMT this year, up 2.7 MMT from 1985/86. Brazil's output may turn out to be less than the current estimate of 9 MMT because of the drought, but would still be up from 8.2 MMT in 1985/86. Caribbean production is estimated to rise nearly a half million. A large increase is expected in India, up 750,000 tons, as a result of higher support prices to producers and better weather. Sugar production is estimated to rise in four of the six largest producers in Asia: India, Pakistan, Indonesia, and the Philippines.

The trend in world sugar output is significant when compared with consumption. Sugar consumption has exhibited some spurts, notably in China and the Middle East, but the world aggregate has increased at an average annual rate of only 2 percent a year since 1980/81. In the six-years 1981/82-1986/87, annual average consumption is estimated at 95.7 MMT a year compared with 99.5 MMT of world sugar production, resulting in an extraordinary surplus of over 22 million tons of sugar on top of initial stocks. (About 5 MMT of potential consumption were lost to starch-based sweeteners.)

The stocks buildup is reflected in the drop in world "free" market prices, from an already low 8.5 cents a pound in 1983 to 5.2 cents in 1984, 4.0 cents in 1985, and 5.1 cents in 1986 (Jan. - Oct.)--prices that cannot cover cost without some compensatory support. We are all familiar with the reasons production has continued to grow despite the low price: the "free" market accounts for less than 15 percent of world production and most production is insulated from the dumping-ground price in the "free" market, by preferential trade arrangements, government-administered prices, and other forms of production incentives. Pressure to keep production going is also felt because of sugar's importance as a foreign exchange earner for many countries, the need to maintain employment, and, simply, producers' political power. (Here is a rich field of research for Nobel Laureate James Buchanan!)

Nonetheless, as surplus stocks mount, costs become increasingly burdensome, and the low price in the "free" market starts to bite. Are we at the point where disincentives can be expected to roll back production? Although 1987/88 production plans have not yet been firmed, the representative country producer seems to say, " Sugar production really must be cut back; you first."

Some analysts have estimated a decline in stocks in 1986/87. USDA estimates show an increase, not because of significant differences in production, nor in the percent rise in consumption in 1986/87, but in the 1985/86 consumption level. Note, however, that if, indeed, stocks decline in 1986/87 (and world futures prices seem to support that estimate), it may only postpone a necessary production restraint. But even if the USDA stock estimate is correct, there seems no evidence that producers are prepared to halt further increases in output. In fact, the recent slight price rise may not only

postpone production restraint but actually induce a spurt in output, thereby extinguishing the price spark.

Concern about world market price prospects have renewed discussions toward an International Sugar Agreement (ISA). An ISA basically aims at controlled prices and market shares, agreeable (as much as possible) to the major sugar importers. An ISA, on balance, may or may not be a good idea, but certain questions perhaps should be considered: If an administered market is "bad" nationally, is it good internationally? If the aim is to enlist as large a membership as possible, does this imply a price target high enough to accommodate the least efficient suppliers? Would not high prices encourage the use of alternative sweeteners? Would an ISA divert sugar exporters from necessary production shifts away from sugar?

U.S. OUTLOOK

Implementation of the sugar provisions in the Food Security Act of 1985 is the dominant facet of the outlook for U.S. sugar in 1987. The 1986/87 crop is the first to be covered by the legislation which extends to 1990/91.

For the 1986/87 crop, the loan rate is the minimum prescribed by the Act, 18 cents a pound (21.09 cents for refined beet sugar), the same as last year. A major difference from last year is that the price-support loan program must be administered at no cost to the Federal government "by preventing the accumulation of sugar acquired by the Commodity Credit Corporation." This means market prices have to be high enough to discourage borrowers from defaulting on their loans and forfeiting their sugar loan collateral. Prices, that is, have to be high enough to cover market expenses and the interest charge on the loan.

On the basis of standard procedures, a market stabilization price (MSP) of 21.78 cents a pound has been calculated for 1986/87. That price, if achieved in the market, would certainly avoid forfeitures. Note, however, that since 1985 the MSP is required only to establish bond and set maximum liabilities for the quota-exempt U.S. import programs (mainly the re-export program). Some sugar trade analysts have indicated that 1986/87 loan forfeitures can be avoided with a price below 21 cents. The precise 1986/87 price target is to be decided by the Administration through the Interdepartmental Sugar Working Group.

The price for raw sugar achieved in the market will set the tone for prices at lower levels in the marketing chain. In fiscal 1985/86, the U.S. raw sugar price (nearby futures contract, New York) averaged 20.46 cents a pound, down from 20.89 cents in 1984/85. Wholesale refined sugar prices (Chicago-West) averaged 23.32 cents a pound, down from 23.55 cents in 1984/85 and 26.24 cents in 1983/84. At the retail level the national average price declined a half-cent this past fiscal year to 35.12 cents a pound.

In forecasting sugar prices for the U.S. market, attention is usually focused on the sugar import quota. The quota, based on tariff headnote authority, is intended to give "due consideration" to the interests of domestic sugar producers and materially affected contracting parties to the General Agreement on Tariffs and Trade. The quota will be announced by December 15. However, we can discuss some of the major factors entering the quota decision.

U.S. sugar production is estimated to be up over 5 percent in 1986/87 to 6.35 million short tons (ST), raw value. Sugarbeet harvested area is up nearly 8 percent. Acreage expanded particularly in Minnesota-N.Dakota, Michigan, and Idaho. Even with the damage from prolonged rain in Michigan, beet sugar production is still expected at about 3.2 million tons, raw value, the highest in five seasons. Cane sugar production, estimated at 3.15 million tons, will be the highest in a decade.

Domestic deliveries of sugar for U.S. use during the last fiscal year fell 3.4 percent, largely from continued loss to high-fructose corn sirup (HFCS) in beverages. Deliveries also declined in processed foods, and slightly in bakery and cereal products. In 1986/87, deliveries could be down almost 2 percent or 145,000 tons, as a result of losses to alternative sweeteners and imported sugar-containing products.

U.S. corn sweeteners deliveries (virtually all for industrial food and beverage use) exceeded sugar deliveries for the first time in 1985. While HFCS displacement of sugar use is almost complete, we expect some further substitution here and there. HFCS-55 consumption (mostly in beverages where it is now 95 percent of all caloric sweeteners used), may be limited to growth of less than 2 percent a year. HFCS-42, with a wider variety of potential application, could increase 3-4 percent a year. U.S. deliveries of HFCS is estimated at 5.4 million tons, dry basis, in 1987, but imports of over 200,000 tons from Canada would put U.S. use at over 5.6 million tons.

Total U.S. sugar use for all categories, including re-exports and the 177,000-ton sale to China, amount to 8.362 million tons in the estimated supply and use table for 1986/87. No figures can be given for total supply at this time because quota imports have not yet been announced. Whatever the size of the quota, the quota year starts January 1. It has not been ascertained whether the quota will be for nine or twelve months.

As we are all aware, there is a growing pressure on the U.S. sugar program. The problem boils down to declining U.S. sugar imports and the multifaceted implications of that, not only in terms of sugar as a commodity of commerce but as a matter of foreign policy and U.S. strategic interests. Quota imports have dropped from 2.98 million tons in fiscal 1983 (the first full year since quotas were imposed in May 1982) to 1.85 million in fiscal 1986. Only in outline, here are some of the factors, both on the supply and the use side, which are tending to reduce imports.

- o U.S. sugar production is rising. Without bad weather this year, output would have reached 6.4 million tons, up 400,000 tons from 1985/86. Increased sugarbeet acreage reflects the better returns relative to other crops. In the 1985 crop year, returns to management and risk were \$100 an acre for sugarbeets compared with minus \$29 for wheat, minus \$39 for cotton, minus \$44 for barley, and minus \$7 for soybeans. For both beet and cane sugar, at prospective prices associated with the 1985 Farm Act, farm and factory production capacities point to a potential output of 6.6 to 6.8 million tons.
- o Domestic sugar deliveries face potentially larger losses from alternative sweeteners and the expanding imports of sugar-containing products. These imports are perfectly legal; they are profitable because of the large disparity between world-priced sugar and U.S. sugar. Between 1981 and 1985, the amount of sugar entering the U.S. through sugar-containing products rose by about 150,000 tons. While various strictures have been applied, and this world-sourced sugar inflow has slowed, there is continued potential for further displacement.
- o At least through 1987, estimated displacement of sugar use by crystalline fructose appears very modest. There may not be a major substitution even over the next five years. However, one can never be too sure in betting against technological progress.
- o Noncaloric sweeteners appear to be moving beyond complementary use and starting to be competitive with sugar and HFCS. No hard data are available, but caloric sweeteners use fell from an estimated 131.2 pounds per capita in 1985 to 129.5 pounds in 1986. We can expect some further decline in 1987.

Table 1.--World Sugar production, consumption, and apparent ending stocks
1975/76 to 1986/87

Crop Year <u>1/</u>	Production	Consumption	Apparent ending stocks <u>2/</u>
Million metric tons, raw value			
1975/76	81.7	79.2	21.0
1976/77	86.3	81.9	24.8
1977/78	92.7	86.2	30.0
1978/79	91.3	89.6	31.0
1979/80	84.6	89.5	24.2
1980/81	88.5	88.5	24.2
1981/82	100.6	90.5	34.3
1982/83	101.3	93.8	41.8
1983/84	96.5	95.8	42.5
1984/85	100.2	96.7	46.0
1985/86	98.1	97.7	46.4
1986/87 <u>3/</u>	100.1	99.7	46.8

1/ Crop year September/August, but includes the outturn of Southern Hemisphere countries which begin harvests prior to September. 2/ Starting in 1981/82, ending stocks reflect the difference between production and consumption and do not take into account import and export estimates.

3/ Preliminary estimate.

SOURCE: Foreign Agricultural Service (FAS), USDA.

Table 2.--World centrifugal sugar production, by region, 1984/85 to 1986/87

Region	1984/85		1985/86		1986/87 <u>1/</u>	
	Beet	Cane	Beet	Cane	Beet	Cane
1,000 metric tons, raw value						
North America <u>2/</u>	2,766	6,081	2,781	6,386	3,025	6,525
Caribbean	0	9,696	0	8,475	0	8,969
Central America	0	1,815	0	1,792	0	1,816
South America	390	14,251	385	12,834	458	13,726
European Community	14,413	11	14,423	14	14,131	17
Other Western Europe	1,095	0	1,039	0	888	0
Eastern Europe	5,631	0	5,538	0	5,365	0
USSR	8,587	0	8,250	0	7,700	0
North Africa	510	1,278	512	1,390	510	1,420
Other Africa	0	6,045	0	5,928	0	5,975
Middle East	2,196	200	1,941	270	2,191	300
Asia	1,620	19,570	1,493	20,936	1,473	21,890
Oceania	0	4,028	0	3,692	0	3,750
Total, by type	37,208	62,975	36,362	61,717	35,741	64,388
Total, centrifugal sugar	100,183		98,079		100,129	

1/ Preliminary estimate.

2/ United States includes Hawaiian cane, but excludes Puerto Rico cane (which is listed under Caribbean).

SOURCE: FAS, USDA

Table 3.--World centrifugal sugar consumption, by region, 1983/84 to 1986/87

Region	1983/84	1984/85	1985/86	1986/87 <u>1/</u>
Million metric tons, raw value				
North America	12.0	11.9	11.8	11.8
Caribbean	1.4	1.4	1.5	1.4
Central America	0.9	0.9	0.9	1.0
South America	10.8	10.8	10.9	11.2
European Community	11.5	11.6	11.5	11.5
Other Western Europe	1.4	1.3	1.3	1.3
Eastern Europe	6.0	6.2	6.0	6.2
USSR	13.3	13.3	13.3	13.5
Africa	8.0	8.0	8.1	8.3
Middle East	4.8	5.1	5.2	5.3
Asia	24.7	25.1	26.1	27.2
Oceania	1.0	1.0	1.0	1.0
Total	95.8	96.7	97.7	99.7

1/ Preliminary estimate.

SOURCE: FAS, USDA

Table 4.--World sugar imports, by region, 1982/83 to 1985/86

Region	1982/83	1983/84	1984/85	1985/86
Million metric tons, raw value				
North America	4.4	4.5	3.6	3.2
Caribbean	0.1	0.2	0.1	0.1
South America	1.0	0.8	0.6	0.2
European Community	2.5	3.1	3.0	3.0
Other Western Europe	0.6	0.5	0.5	0.5
Eastern Europe	1.0	1.3	1.1	1.0
USSR	5.9	5.6	5.3	5.5
North Africa	2.2	2.2	2.2	2.1
Other Africa	1.0	1.3	0.9	1.0
Middle East	2.7	2.8	2.8	2.8
Asia	6.4	5.6	7.5	7.8
Oceania	0.3	0.2	0.2	0.2
Total	27.9	28.2	27.9	27.5

SOURCE: FAS, USDA.

Table 5.--World sugar exports, by region, 1982/83 to 1985/86

Region	1982/83	1983/84	1984/85	1985/86
Million metric tons, raw value				
North America	0.3	0.5	0.5	0.7
Caribbean	8.0	8.3	8.8	7.6
Central America	1.1	0.8	0.8	1.0
South America	4.3	4.1	4.5	3.2
European Community	6.8	6.0	5.7	6.6
Other Western Europe	0.3	0.2	0.1	0.1
Eastern Europe	0.8	0.8	1.1	0.9
USSR	0.2	0.3	0.3	0.3
Africa	2.6	2.1	2.7	3.0
Middle East	0.2	0.5	0.5	0.1
Asia	3.9	3.6	3.8	3.3
Oceania	3.1	2.9	3.2	3.0
World Total	31.6	30.0	31.9	29.8

SOURCE: FAS, USDA.

Table 6.--World and U.S. raw sugar prices, 1975 to 1986

Year/Month	Coffee, Sugar & Cocoa Exchange		
	International Sugar Agreement world price <u>1/</u>	World price <u>2/</u>	United States <u>3/</u>
Cents per pound			
1975	20.37	20.49	22.47
1976	11.51	11.58	13.31
1977	8.10	8.11	11.00
1978	7.81	7.82	13.93
1979	9.65	9.66	15.56
1980	28.66	29.02	30.11
1981	16.89	16.93	19.73
1982	8.40	8.42	19.92
1983	8.46	8.49	22.04
1984	5.21	5.18	21.74
1985	4.06	4.04	20.34
1986 (Jan.-Sep.)	5.55	6.18	20.87
<u>1985:</u>			
Jan-March	3.72	3.68	20.67
April-June	3.01	2.96	21.11
July-September	4.24	4.21	20.44
Oct.-Dec.	5.28	5.30	19.15
<u>1986:</u>			
January	4.86	4.87	20.67
February	5.57	5.55	21.01
March	6.95	7.07	20.95
April	8.33	8.36	20.85
May	7.63	7.64	20.88
June	6.33	6.36	20.99
July	5.55	5.58	20.97
August	5.57	5.50	20.87
September	4.68	4.67	20.87
October	5.39	5.42	21.03

1/ The International Daily Price is the arithmetical average of the (New York) Coffee, Sugar & Cocoa Exchange Contract No. 11 spot price and the London Daily Price after conversion of the latter to U.S. cents per pound avoirdupois f.o.b. and stowed Caribbean port in bulk or, if the difference between these two f.o.b. prices is more than ten points, the lower of the two prices plus five points. 2/ 1975-Oct. 1977 and 1979-1986, Contract No. 11, f.o.b. Caribbean (inc. Brazil), bulk. Nov. 1977-1978, International Sugar Agreement, f.o.b. Caribbean, bulk. 3/ 1975-Oct. 1977 and 1979-May 1985, Contract No. 12, c.i.f., duty/paid, New York. Nov. 1977-1978, London Daily price, c.i.f. U.K., converted to duty/paid, New York. June-Dec. 1985, No. 12 nearby futures. 1986, No. 14 nearby futures.

SOURCE: International Sugar Organization, and Coffee, Sugar & Cocoa Exchange, Inc.

Table 7-- U.S. sugar production and harvested area,
1975 to 1986 crop years

Year	Production			Harvested area	
	Beet	Cane	Total	Beet	Cane
	1,000 short tons, raw value			1,000 acres	
1975-80 average	3,390	2,730	6,120	1,298	705
1981-85 average	2,945	2,973	5,918	1,102	715
1985	2,997	3,033	6,030	1,102	723
1986 forecast	3,200	3,150	6,350	1,188	754
Percent Change: Average 1975-80 to 1981-85	-13.1	8.9	-3.3	-15.1	1.4
1985 to 1986	6.8	3.9	5.3	7.8	4.3

SOURCE: NASS and ERS, USDA.

Table 8--U.S. sugar deliveries to industrial and nonindustrial users,
1980, 1985 and Jan.-Sept. 1985 and 1986

Item	Calendar year		Jan.-Sept.		Fiscal year (FY)		Percent change, FY 1985 to FY 1986
	1980	1985	1985	1986	1985	1986	
Thousand short tons, refined <u>1/</u>							
Bakery/cereal	1,337	1,494	1,131	1,084	1,471	1,447	-1.6
Confectionery	932	1,059	788	782	1,052	1,053	.1
Processed Foods	535	428	351	313	439	390	-11.2
Ice cream/Dairy	450	456	356	347	449	448	-.1
Other	589	441	322	318	420	437	4.0
Beverage	2,161	340	276	211	436	274	-37.2
Nonindustrial	3,353	3,123	2,282	2,250	3,124	3,091	-1.1
Total, includ- ing non-food	9,477	7,472	5,609	5,407	7,520	7,270	-3.3

^{1/} U.S. deliveries data do not include Hawaii. To convert to raw value, multiply by 1.07.

SOURCE: Sugar Market Statistics, NASS and ERS, USDA.

Table 9.--U.S. sugar supply
and use, fiscal 1985, 1986, and 1987

Description	1984/85	1985/86	1986/87
	1,000 short tons, raw value		
Beginning stocks 1/	1,611	1,759	1,652
Total production	5,832	6,019	6,350
Beet sugar	2,914	2,989	3,200
Cane sugar	2,918	3,030	3,150
Total offshore receipts	2,707	2,404	--
Quota sugar	2,677	1,850	--
Quota shortfall	-30	--	--
Quota transfer	-455	--	455
Quota-exempt for reexport	419	467	350
Quota-exempt for polyhydric alcohol	22	29	30
Total foreign	2,633	2,346	--
Puerto Rico	74	58	50
Total supply	10,150	10,182	--
Total exports	464	507	430
Quota-exempt	390	463	375
Puerto Rico	60	55	55
Export adjustment	14	-11	--
CCC disposal	--	127	177
Polyhydric alcohol	22	29	30
Refining loss adjust.	48	50	50
Stat. adjust. 2/	-240	-3	--
Total deliveries	8,097	7,820	7,675
Total use	8,391	8,530	8,362
Ending stocks 1/	1,759	1,652	--
	Million		
Population	238.8	241.0	243.2
	Pounds, refined		
Per capita sugar deliveries	63.4	60.7	59.0
	Percent		
Ending stocks/total use	21.0	19.4	--

1/ Stocks in hands of U.S. primary distributors and CCC.
2/ Calculated as a residual. Largely consists of invisible stocks change of wholesalers, retailers, and industrial users.

SOURCE: Data are from NASS, Sugar Market Statistics. Beginning fiscal 1983, imports based on Customs data for quota sugar and company data for quota-exempt sugar; exports based on Census data. Estimates are from Interagency Estimates Committee.

Table 10.--U.S. caloric sweeteners use, 1980, 1985 to 1987 ^{1/}

Calendar year	Sugar, raw	Sugar, refined	HFCS	Total corn sweeteners, including HFCS, glucose, and dextrose	Honey and edible sirup	Total
Pounds per capita, dry basis						
1980		83.6	19.1	40.2	1.2	125.0
1985		63.3	45.1	66.6	1.3	131.2
1986		60.8	45.8	67.3	1.4	129.5
1987 ^{2/}		59.1	46.4	67.9	1.5	128.5
Million short tons, dry basis						
1980	10.189	9.522	2.180	4.583	0.137	14.242
1985	8.110	7.579	5.385	7.962	0.156	15.697
1986	7.850	7.336	5.525	8.122	0.169	15.627
1987 ^{2/}	7.700	7.196	5.650	8.268	0.183	15.647

^{1/} Includes sugar in blends/mixtures but not sugar in imported sugar-containing products. Includes HFCS imports.

^{2/} Forecast.

Table 11.--U.S. use of noncaloric and caloric sweeteners, 1980 to 1986

Calendar year	Saccharin	Aspartame	Total of noncaloric sweeteners ^{1/}	Caloric sweeteners	Total all sweeteners
Pounds per capita, dry basis					
1980	7.7	0.0	7.7	125.0	--
1981	8.0	0.2	8.2	125.1	133.3
1982	8.4	1.0	9.4	123.2	132.6
1983	9.5	3.5	13.0	124.6	137.6
1984	10.0	5.8	15.8	126.9	142.7
1985	6.0	12.0	18.0	131.2	149.2
1986	5.5	13.0	18.5	129.5	148.0

^{1/} Sugar-sweetness-equivalent. Assumes saccharin is 300 times as sweet as sugar and aspartame is 200 times as sweet as sugar.

SOURCE: ERS, USDA estimates.

Table 12.--U.S. sugar imports, fiscal 1980 to 1986

Fiscal year	All imports ^{1/}	Quota imports ^{2/}	All imports minus all exports
1,000 short tons, raw value			
1979/80	4,874	--	4,430
1980/81	4,967	--	3,704
1981/82	3,603	--	3,303
1982/83	3,238	2,981	2,844
1983/84	3,615	3,030	3,221
1984/85	2,707	2,192	2,243
1985/86	2,404	1,850	1,897

^{1/} Includes imports for re-export as refined sugar or in sugar-containing products; and small quantities of imports for polyhydric alcohol and specialty sugars.

^{2/} Actual Oct. 1 to Sep. 30 fiscal year imports, reflecting quota transfers (plus or minus) between fiscal years, and small quantities of unfilled sugar quota allocations. Restrictive sugar quotas started May 3, 1982.

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THE U.S. SUGAR PROGRAM: A FOREIGN EXPORTER'S PERSPECTIVE

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The purpose of this paper is to discuss the effects of the current sugar program on the different sectors related to the sugar production, distribution and consumption.

Among the different sectors affected by the U.S. sugar program, a particular emphasis will be given to the Latin American Sugar Exporting Countries, many of which have as a main market the United States.

This paper will then be divided in three parts:

- a brief comment on the U.S. Sugar Legislation.
- the main effects of the last changes in the said legislation.
- the effects on the Latin American countries.

I. The U.S. Sugar Program

In order to summarize the changes in the U.S. sugar program we can consider three different periods:

- a. the Sugar Act, starting in 1934 and expiring in 1974.
- b. the attempts to regulate the market between 1974 and 1981.
- c. the situation after the imposition of quotas in may 1982.

During the functioning of the Sugar Act the activity was regulated including almost all aspects. In this sense it was included the internal production as well as the imports minimizing the conflicting interests inside the sector.

After the expiration of the Sugar Act there were a number of efforts in order to conciliate the different interests in a rapidly changing sugar situation, both internationally as well as domestically.

The combination of different factors was the main feature of the sugar situation particularly those deriving from the new substitutes in the market, the campaigns against the consumption of sugar and the indefiniton of the sugar legislation.

The sugar legislation was the combination of a price support program in an attempt to enable domestic producers to attain the designated market price objective, a fixed import duty, a variable import fee and the working of the loan program under the C.C.C.

The Administration participated actively in the negotiation for a new International Sugar Agreement under the hope that if the ISA would have worked it will allow to solve the domestic conflict without cost for the government.

On the other hand, it was clear the declining trend in domestic sugar consumption due to the combination of anti-sugar campaigns, which emphazise on supposed health problems caused by sugar, and the significant increase in the production and consumption of sugar substitutes, mainly the High Fructose Corn Syrup.

The conflicting interests were reflected in changes in the legislation until the proclamation of the 1981 Farm Bill, which institucionalized a greater degree of protectionism.

In May 1982, the Administration decided to set a global import quota in order to mantain a domestic support price with minimum cost for the government starting a new period, whose main feature was a drastic decrease in sugar imports by the USA.

Between 1974 and 1981 the domestic production grew from 5.4 million metric tons to 5.8 million M.T. while domestic consumption decreased from 10.3 million M.T. to 8.9 million M.T.

The decrease in consumption was the combination of different factors:

- a relative low grow in the consumption of caloric sweeteners from 122 lbs to 125 lbs per capita, due to the reaching of a saturation point.
- an impressive increase in the consumption of corn sweeteners from 25 lbs to 45 lbs. In particular it was due to the increase in the consumption of HFCS from 3 lbs to 23 lbs, under the indirect protection of the sugar program.

The result was reflected in the volume of imports which decreased from 5.2 million M.T. to 4.6 million M.T.

But the effects of the quota imposed in 1982 were much higher

that the ones mentioned above.

Between 1981 and 1985 the internal sugar consumption fell from 8.9 million M.T. to 7.2 million M.T., while the corn sweeteners consumption grew from 4.64 million million M.T. to 7.05 million M.T.

In terms of participation in the caloric sweeteners market sugar fell from 83% in 1970 to 63% in 1981 and 49% in 1985 while corn sweeteners grew from 16% to 36% and 50% respectively.

Sugar imports fell from 4.6 million M.T. to 2.3 million and it is expected that for 1987 they will not exceed 1.1 million M.T.

II. The effects of the U.S. Sugar Legislation

The imposition of the sugar quota has produced different reactions by the interested sectors, whose standings could be summarized as follows:

- The domestic consumers have been harmed by higher prices as a result of the use of protectionist measures, when international prices are low, and by the international prices when they were high. In other words, they did not have any protection from high international prices and they did not have any advantage when prices in the international market were low.

Undoubtely, the internal consumer sector was one of the most negatively affected by the sugar program.

If we consider the 1985 prices our conservative estimate of the excess payment by U.S. consumer - even considering an increase in consumption for lower prices of 15% - because of the sugar program will be around 3.7 billion dollars for that year.

This amount is more than enough to subsidize the domestic producers for almost 700 dollars a ton, clearly much more of what they are receiving now.

Consequently the domestic consumers have backed any attempt to lower the internal prices and opposed to the current protectionist policy adopted by the USA.

- The domestic refiners, whose chances to remain in the market are linked to the volume of imports, have worked against the reduction of imports. This sector has felt very severely the impact of the sugar program and it is notorius the closing of refiners because of the size of the reduction of its activity.

As expressed before the sugar imports have declined from a maximum figure of 5.3 million M.T. in 1977 to 2.3 million M.T. in 1985, with an estimate of less than 1.1 million M.T. for 1987.

- The sugar exporting countries have been affected by the bearish effects in international prices resulting of the decrease of the international demand induced by the contraction of U.S. imports.

The USA has been the main sugar importer until 1980, with the U.S.S.R. being the number one importer since then.

The world net exports to the free market have fallen from 20.6 million M.T. in 1981 to 18.8 million M.T. in 1985 and it is expected to decrease even more.

The international prices in the free market have decreased from 16.83 cents per lbs. in 1981 to 4.06 cents in 1985 as a result of the combination of a reduced demand (largely due to the U.S. situation) and an increased supply (mainly due to the E.E.C. policy).

Those sugar exporting countries which supply the U.S. market has been doubly affected by lower international prices and a reduction of sales to the preferential U.S. market.

On the other hand, we have some sectors who has been benefited by the sugar program:

- The U.S. domestic producers, intended to be the beneficiaries of the sugar program, have backed any protectionism measure in order to get a price that will allow to remain in the market.

The question is that if the trend continue in a few years the sugar program will harm the supposed beneficiaries: the internal producers.

If the cristalized fructose enter in the market, under the protection of the sugar program, in a few years the domestic producers could be severely affected as well as the refining industry.

- The corn sweeteners sector, mainly the HFCS producers, have given support to any measure to increase the internal sugar price, getting a safe umbrella which has allowed then not only to remain in the market but to increase significatively its share.

In summary, the real winners as a result of the sugar legislation have been the corn sweeteners producers getting the

indirect benefits from higher sugar prices at the expense of the domestic consumers, the internal refiners and the foreign suppliers, while the domestic sugar producers being the direct beneficiaries of the program might be creating the conditions for its own deterioration under the possibility that once the imports be nil, the growing of substitutes will be done decreasing the internal production of sugar.

As we will note in the following analysis there are some other domestic sectors in the USA, which will be seriously affected indirectly as those exporting to Latin American countries and the banking sector being the creditors for the Latin American foreign debt.

III. The effects on the Latin American Sugar Exporting Countries

The importance of cane sugar activity in Latin American can be summarized as follows:

Sugar production: 28 million metric tons

Cane sugar production: 450 million metric tons

Acreage planted: 9 million hectares

Sugar mills: 650

Persons directly employed in sugar activity: 2.5/3.0 million

Sugar exports: 13 million metric tons

Molasses production: 10 million metric tons

Alcohol production: 15 billion litres

Sugar in third source of foreign currency for Latin America after oil and coffee.

With a per capita sugar consumption of more than 40 kgs - twice the world average - sugar is an important part of the Latin America people diet.

The effects of the U.S. sugar policy on the Latin American sugar exporting countries can be summarized as follows:

- Total sugar exports to the free market have fallen from 7.4 million M.T. in 1981 to 6.3 million in 1985.
- The value of the exports to the free market has decreased from 3 billion dollars to 1.1 billion dollars.
- Sugar exports to the U.S. market have fallen from 2.9 million M.T. in 1981 to 1.7 million M.T. in 1985. It is expected that in 1987 they will not exceed 720,000 M.T.

- The value of this exports have decreased from 1.3 billion dollars in 1981 to 700 million dollars in 1985.

The expected value for 1987 will be below 300 million dollars.

- Until 1975 the U.S. market was the main buyer for Latin American Sugar.

Since 1976 the U.S.S.R. has taken that place.

In 1974 U.S. purchased 27% of our sugar sales and the U.S.S.R. 17%. In 1985 the figures are 14% and 35% even if we take Cuba out of the picture the sales to the U.S.S.R. have reached almost 25% of the total in 1983.

In summary, a good share of the decrease in foreign currency earnings generated by sugar exports by Latin American countries is due to the decrease of sales to the U.S. market, despite of the higher price paid by the USA in comparison to the international price.

Another important fact is the decrease in the size of the market and the significant drop in the international price, of which the U.S. policy is partially responsible.

In order to complete the picture it would be worthwhile to give a brief look to the Latin American situation as a whole.

- The per capita gross national product of Latin America has drop 9% since 1980.
- The value of imports has decreased by 36% mainly due to the lack of foreign currency.
- Although the nominal value of exports has risen slightly (3% in five years) since the payment of interest has grown 96%, the possibility of increasing imports is nil.
- The foreign debt has grown from 222.5 billion dollars to 368.0 million dollars in 1985, that is by 65%.
- The terms of trade for Latin American foreign trade have drop by 16%.
- The price index has increased from 56.1% in 1980 to 328.3% in 1985.
- Although we have no precise figures for total unemployment there is an evidence that it has increased to one of the highest levels in history.

On the other hand, the purchases by Latin American countries of U.S. products have drop by almost 28% since 1981.

Our balance of payment of goods with the USA, which has a positive value of 3 billion dollars in 1981, has shown a deficit of 15 billion dollars in 1985.

Besides the obvious conclusion we could have regarding the effects in the Latin American countries because of the U.S. policy, with very negative effects on social and political grounds, we are bringing two new sectors to the picture:

With the current situation the negative effects in the U.S. producers which exports to the Latin American countries are very significant.

For the banks that are creditors of Latin American the possibilities of continuation of payment of the foreign debt are getting smaller.

Final Remarks

- The USA sugar policy is largely responsible for the current situation of the international sugar market and the fact that the E.E.C. is the other main co-responsible is not an excuse for the U.S. policy.

In general, we could see that in this trade conflict between the USA and the E.E.C. the main casualties are the underdeveloped countries.

- A larger share of the burden of the U.S. sugar policy is borne by the U.S. consumers and the U.S. refiners, with the probability that the continuation of the current policy, the sugar domestic producers will be harmed as well.
- In particular, consumers are paying more and consuming less for a product considered, except for its contribution to dental caries, "not hazardous to the general public" by the latest report of the FDA.
- The economical, social and political effects on Latin America has been very significant in a very negative environment.
- The destination of exports is changing with the U.S. being replaced by the U.S.S.R. as the main importer of our sugar exports.
- Another affected sector in the USA are those selling goods to Latin America and the bank creditors of our foreign debt.

- If we cannot sell those goods in which we have a comparative advantage sooner or later we will have nothing to sell. Trade is a two way relationship: if we cannot sell we cannot buy and, furthermore, we cannot pay our debts.

Note: The figures used are elaborated by GEPLACEA using the following sources:

- International sugar market from International Sugar Organization.
- U.S. market from Sugar and Sweetener Report, U.S.D.A.
- Latin American figures from Economic Commission for Latin America and the Caribbean.

ANNUAL AGRICULTURAL OUTLOOK CONFERENCE

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Outlook '87, Session #7

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SWEETENER OUTLOOK, 1987

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My purpose today is to discuss the outlook for sweeteners in the coming year, more to identify a few of the longer-term factors that are shaping these markets than to estimate production, consumption, or prices. And, while I intend to cover some of the points made by Mr. Cerro in the preceding paper, I do not see this as a debate, in spite of the titles of these talks in the program. I suspect we have many areas in which we agree. No one benefits from commodity depressions like the one still dominating world sugar markets, at least not in the long run. It would be better for the sweetener industry worldwide if the situation were more stable, and prices nearer normal levels. However, the realistic prospects for such a situation appear remote at this point.

As we have heard, the outlook for sugar for 1987 is little different from the past several years, so that its very stability may be its most remarkable feature. World production will be large enough to prevent any significant decline in stocks, which are so large that they will dampen or even smother most price changes during the year. The expectation thus is for world prices to be fairly flat and almost certainly below 10 cents per pound.

World sugar prices have been below that level since April 1982, below production cost for even the most efficient nations. Nevertheless, world production in 1986/87 will be about 2 percent greater than it was last year, as output continues to expand even though returns do not cover costs. Such performance following 6 years of depressed prices might be astonishing to beginning students of economics. Prices are low by any standard. Importers would be expected to increase purchases because of the bargain prices, and exporters to reduce production and stocks for the same reason. However, to the extent 1986 is any guide at all, production capacity is being maintained.

Adjustments are being made at a snail's pace, and some appear to be moving in a direction opposite to that expected.

Young economists might be shocked by the recent behavior of world producers and consumers but the trade is not. They know that world sugar markets, like all commodity markets, are more complicated than they might seem. Producers continue to expand in the face of low world prices because they sell much of their sugar locally or in other protected markets, and not at world prices. Consumers pay local prices in most cases, not world prices.

Only about 27 percent of world sugar consumption is involved in international trade, and an even smaller 16 percent traded at world prices. More than one-fifth of the trade is under special arrangements and artificially high prices like those the USSR pays Cuba. Furthermore, very little of the sugar traded at market prices is sold to consumers at world prices. Even the free market sugar bought by non-market economies like the USSR is sold on the basis of domestic policies and not world prices. Japan and other market economies have substantial duties and regulate domestic prices. The United States, as we know, has a producer price support policy and regulates prices of domestic and imported sugar through that program.

The complicated world of sugar economics thus becomes a little clearer when politics are added. Sugar producers and consumers around the world are not necessarily acting in non-economic ways when they raise production in the face of declining world prices. Most likely, they are responding directly to their own economic realities, which may involve foreign exchange or other domestic criteria in addition to sugar prices. World supply and demand are so fully obscured for most producers and consumers that the concept of a world market has only indirect relevance.

Furthermore, the situation is not self-correcting. Because market prices have been erratic, countries increasingly have insulated producers and consumers from its sharp swings. As more markets have become better insulated, price swings tend to become sharper. Producers argue that no nation can afford to let temporary low world prices ruin its industry; consumers also argue for protection against severe price increases. The world free market has been shrinking absolutely since 1982. As consumption has grown trade has declined steadily in importance.

Looking Backwards

Price volatility has been a characteristic of world sugar markets for 2 centuries, or more. For the 40-year period through 1974, the United States extensively regulated sugar production and imports and thereby stabilized prices. During 1975-81, most of the regulations were removed, although prices were supported for 3 of the 7 years.

Contrary to the often-heard view that U.S. programs caused the development of High Fructose Corn Sweeteners (HFCS), it was during this period of deregulation that HFCS rapidly began to replace refined sugar in a broad range of industrial uses.

The United States is the world's largest feed grains producer and exporter and the largest producer of grain by-products. Corn sweeteners, especially HFCS, have used large production cost advantages to capture all of the recent growth in caloric sweetener markets and substantial shares of existing industrial markets, especially beverages. Sugar accounted for 76 percent of the U.S. caloric sweetener consumption in 1975, but only 49 percent by 1985; HFCS increased its share from near 0 to 34 percent.

The market shifts have meant a market in turmoil and severe adjustments for the domestic industry, as the statistics starkly illustrate. In 1975, 118 beet sugar factories and sugarcane mills were in operation. By 1985, 36 percent of those were closed, along with more than 16 percent of industry capacity. Domestic production was 13 percent lower. The late 1970s and early 1980s were a period of contraction in the domestic sugar industry.

U.S. Sugar Factories and Domestic Sugar Production

Item	Beet Sugar		Cane Sugar 1/		Total		Percent Change
	:	:	:	:	:	:	
	1975	1985	1975	1985	1975	1985	
Plants (number)	56	39	62	42	118	76	-36
Daily Capacity (1,000 tons)	208	139	274	264	482	403	-16
Production (mst) 2/	4.0	3.0	2.9	3.0	6.9	6.0	-13

1/ Mainland plus Hawaii. Excludes Puerto Rico.

2/ Raw value basis.

Source: USDA.

Impacts of U.S. Sugar Programs

In the face of declining world prices and a shrinking domestic market, the U.S. government has imposed country-by-country import quotas since 1982, and has cut the quotas as domestic sugar markets have declined. The continued loss of U.S. sugar markets has led to growing concerns by exporters who traditionally ship sugar to the United States. For example, an August 1986 Organization of American States' staff report for the Special Committee on Consultation and Negotiation concluded that U.S. sugar imports under the 1981 farm bill totaled nearly 10 mmt lower than they would have been under the 1948 Act and that access to the U.S. sweetener market "will hinge directly upon a change in the sugar loan program."

Our research, and research by others, suggests that this view misstates both the causes and effects of the current situation. U.S. price support programs for sugar have purposes similar to those for most agricultural commodities, and they have many of the familiar shortcomings of those programs as well. They were implemented in the face of chaotic world prices and are more a result of low world prices than their cause--although U.S. sugar programs like those in all major producing and consuming nations have important impacts on world prices. Furthermore, while those programs are very important to the U.S.

industry, small adjustments in their operation or even their abolition probably would not improve exporters' revenues significantly.

In an effort to understand the impacts of the 1981 program, we estimated world sugar and HFCS prices, production, and consumption in its absence and the impact of such changes on 13 CBI exporters by 1984, the third year of the 1981 law. Such changes would be complex. Caribbean exporters receive premium prices in domestic markets, in the United States and in the EEC; in 1984, an average U.S. value of nearly 20 cents per pound and about 15 cents per pound in the EEC. However, they received only 6 cents per pound in the world market where nearly 40 percent of their sugar was sold.

Had there been no U.S. 1981 program, the U.S. price likely would have been the same as the world price, except for a small duty. After 3 years of low domestic prices, U.S. production would have been much lower. Instead of producing 9.5 mmt of sweeteners (raw value) in 1984 and importing 3.2 mmt, the United States would have produced about 6.4 mmt and imported 6.0 mmt. Most of the reduction would have been domestic sugar.

Compared to the actual situation in 1984, the no program scenario would have meant increased CBI exports to the United States, and smaller exports to the world market. However, the result of all these changes including the sharp reduction in U.S. prices to world levels (to about 11.4 cents per pound) would have reduced CBI sugar revenues by about \$60 million. The decline would have been in spite of a 53 percent increase in exports to the United States and an 86 percent increase in world prices because these would have been more than offset by the 43 percent decline in U.S. market prices.

Four conclusions are clear from this analysis. First, while world prices in the 10-12 cent range might well have resulted from the absence of the 1981 law, and while such prices would be a tremendous improvement over today's levels, they would not have meant profitable production for most Caribbean producers. Even the Dominican Republic, likely the most efficient CBI producer, probably cannot produce at a profit for 10 to 12 cents per pound. Thus, very major reductions in the U.S. sugar industry would have had little beneficial impact on CBI exporters as long as world prices continue to be depressed by persistent overproduction.

Second, the protected markets in the United States and the EEC are extremely valuable even though they are smaller than the exporters would like.

Third, the U.S. sugar program is vitally important to domestic producers because the world market is so chaotic, and the political representatives of the states and regions affected can be expected to be sensitive to that fact. In the absence of the 1981 program, domestic production of both HFCS and sugar would have been lower, but the cuts would have come largely from sugar. Sugar production would have been cut by more than 60 percent from the 1985 level, while HFCS production would have been lower by about 28 percent.

Most of the investment in 1984 HFCS production occurred before the 1981 law was passed. By late 1981, planned and operational HFCS capacity was nearly 4.9 mmt. Without that law, the more than 40 percent decline in HFCS prices

(compared to those expected in 1981 and 1982) would have limited expansion in subsequent years, even though the HFCS price probably would have continued above variable cost of production. Some of the highest cost existing plants would have been closed, and part of the planned expansion cancelled within 12 to 18 months. HFCS production that was about 85 percent of industry capacity in 1985 would have been reduced, perhaps by 1.5 mmt.

The U.S. sugar industry would have faced far more intense economic pressure because its costs are higher. Those firms who were able to reduce costs to minimal levels and to persuade producers to sell sugarbeets and sugarcane for sharply lower prices might have survived. Certainly, the U.S. sugar industry would have contracted severely.

Because the cost of such a policy would be severe for sugarcane and beet producers, cane and beet processors, and HFCS and corn producers, the Congress wrote the 1981 law and extended its basic provisions in 1985. Given the immense stakes involved, the industry can be expected to press for the continuation of a similar policy in the future.

Finally, HFCS has been an extremely effective competitor for U.S. sugar markets and will continue to be on the basis of low and falling production costs. The food industry will find new ways to substitute HFCS for sugar, especially as HFCS producers design more versatile products. The markets now held by HFCS are unlikely to be recaptured by either domestic or imported sugar regardless of a change in U.S. price support programs in the absence of a major change in the sweetener industry's basic cost structure.

Conclusion

The economic pressures in world and domestic sugar markets have spared almost no corner of the market. The sugar market worldwide is so dominated by domestic policies that the world price provides little effective guidance for economic adjustment. And, since the failure of the 1977 International Sugar Agreement, there appears to have been little serious effort to design a mechanism that could make world prices more effective.

In such a setting, the dynamic sweetener market in the United States will continue to face strong pressures both from international and domestic competitors. Domestic sugar prices have been stabilized in spite of technology advances which have resulted in the loss of large market shares to competitive sweeteners. As a result, the U.S. program has become increasingly important to U.S. sugar producers at the same time it has become more restrictive.

Few U.S. policymakers would prefer the current restrictive programs in a different competitive environment. Nevertheless, economic and political realities imply the continuation of U.S. programs just as they imply the continuation of market intervention by most other nations.

These conclusions raise questions about future growth of the sweetener market worldwide, even from today's depressed levels. Should importers continue to limit their reliance on world markets, then exporters are sooner or later going to be forced to reduce their resources in sugar production. This will be a

very difficult task if they are to preserve their most efficient producers. Nevertheless, the current economic and political realities point to individual adjustments away from sugar as the only feasible alternative in the absence of an effective international agreement to regulate exports and prices worldwide.

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OUTLOOK FOR DAIRY

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The level of uncertainty about 1987 conditions in the dairy industry is extraordinary. Milk production will be buffeted by the conflicting forces of a continuing supply shift and lower returns than during most of the eighties. Moreover, the Dairy Termination Program (DTP) was superimposed on these basic factors. The DTP is removing a sizable share of the industry's producers and has partially obscured the actions of those who will remain a year from now. Industry conditions in late 1987 may set the pattern for the rest of this decade.

DTP Drops Milk Output

Milk production in early 1986 still reflected the 1985 surge in output that was triggered by higher milk-feed price relationships and by the resumption of normal production by most diversion program participants. Winter production was at record levels and was up 7 percent from a year earlier. Since then, the DTP has progressively reduced milk output; production was 4 percent below a year earlier in October. For all of 1986, second-half declines will not offset first-half increases—leaving the annual total up about 1 percent from 1985.

Output per cow has been driven by increased concentrate feeding resulting from favorable milk-feed ratios. The small gains from a year earlier during July-October do not represent a weakening of output per cow. One of the after effects of the diversion program was a very unusual seasonal pattern in milk per cow during 1985. Compared with 1983 (the most recent year not affected by the diversion program), 1986 increases have been steady and strong. Milk per cow in 1986 will total about 2.5 percent above 1985 and more than 6 percent over 1983.

The DTP has sharply reduced milk cow numbers. In early fall, cow numbers were 4 percent below a year ago. At this stage, inferences about non-DTP producers are very tentative. The intentions of the DTP participants and the reported cow number pattern suggest that non-participants slightly increased cow numbers last spring and have maintained that level since then. Expansion by nonparticipants may have been moderated by relatively low returns over concentrate costs, financial difficulties for some producers, and easing of the upward pressure caused by a very large supply of dairy heifers. Average cow numbers for 1986 probably will be down about 1.5 percent from last year.

The Dairy Termination Program

The DTP triggered one of the sharpest structural changes ever in the dairy industry. Almost 14,000 producers agreed to sell their dairy cattle for slaughter or export and to stay out of milk production for at least 5 years. These producers had marketed over 12 billion pounds of milk in 1985. The bids averaged about \$15 per cwt of 1985 marketings.

Most of the DTP producers left during the first period, April-August 1986. More specifically, the heavy slaughter months were April, May, and August. Participation generally was much higher in the Southern and Western regions than in the Northern regions. Contracting farmers tended to be average or above average in both herd size and output per cow.

The DTP did not cause these structural changes; most of the producers probably would have left dairying by the early nineties. The DTP compressed exit into a shorter adjustment period. While such an accelerated adjustment may benefit both producers and taxpayers, it is the responses of producers and consumers to the current and expected prices that will determine if large surpluses are behind us.

Feed Prices Lower

Concentrate feed prices have fallen and are expected to be relatively low in 1987. Next year's farm price of corn probably will be down more than a third from 1985. However, this comparison greatly exaggerates the resulting effects on the profitability of milk production. Protein feeds are an important ingredient of dairy rations. Soybean meal prices during 1987 are expected to be only modestly below 1986 and considerably above 1985 because of a shift of value from oil to meal. In addition, the price paid for dairy feed includes a substantial margin to cover costs of transportation, manufacture, and merchandising--which have not declined. At current prices, a 25-percent drop in farm corn price would be equivalent to a 8-percent decline in average ration value. In terms of profitability of milk production, such a drop in farm corn price would be equivalent to less than a 2-percent increase in milk prices.

The 1986 average value of concentrates will be about 6 percent below 1985's \$7.35 per cwt. The effective milk-feed ratio will average about 1.75, up just slightly from 1985. In 1987, the average concentrate value probably will decline 8-12 percent. The milk-feed price ratio will be considerably higher, probably a record.

Production Outlook

Next year will test whether the reduction in returns have been sufficient to blunt the upward momentum in milk production. A record-high milk-feed price ratio will provide incentive for strong increases in output per cow. However, the incentive to expand cow numbers is much less. Returns over concentrate costs may be up slightly from 1986 but will stay well below the levels of the early eighties. The certainty of support-price reductions if large surpluses return may dampen enthusiasm for major new investment.

Lastly, larger numbers of dairy operations changing ownership may weaken cow numbers. Typically, some time passes between when the former owner stops production and when the new owner reaches full production. Under these conditions, nonparticipants probably will continue to expand, but only modestly.

About three-fourths of the DTP cows will have been slaughtered by the start of 1987. Slaughter under the DTP will average about 20,000 head monthly during the first half of 1987, with somewhat heavier slaughter during the winter than during spring. July-August slaughter will be considerably larger as the end of the program nears. Milk production during the first half of 1987 probably will be 2-4 percent below a year earlier because of the DTP. Second-half output probably will be closer to a year earlier. For all of 1987, milk production is expected to be down 1-3 percent.

Tighter Markets Boost Prices

Farm and wholesale prices responded to tighter supply-demand conditions by posting a substantial seasonal rise during the second half of 1986. Butter prices reached CCC's sell-back level last summer, American cheese prices rose about 6 cents per pound, and even prices of nonfat dry milk edged up this fall. The rise in the Minnesota-Wisconsin (M-W) price of manufacturing grade milk has exceeded 70 cents per cwt, bringing this fall's average milk prices above a year ago. Seasonal rises of this size in market prices have been rare in the surplus-dominated eighties but were typical of most of the seventies. Because of large declines early in the year, 1986 milk prices will average about 30 cents per cwt below a year earlier. Adjusted for differences in deductions, average milk prices will be down about 55 cents this year and likely will be the lowest since 1978.

A seasonal return to surplus conditions and the 25-cent reduction in support price on January 1 will push prices sharply lower by next winter. However, the more modest surplus may not push the M-W price as much below support level as in most recent years. The second-half seasonal rise is currently expected to be moderate, possibly similar to this year's. Such an increase would leave the 1987 average price of all milk slightly below 1986. The effective farm price would be similar to this year's.

The price projection for late 1987 is by far the most tentative aspect of the outlook. Second-half developments probably will affect prices the most. If supplies are building by then, seasonal rises might be minimal. On the other hand, large price increases could occur if milk production continues to weaken after the end of the DTP.

Retail Prices Steady

Retail dairy prices were fairly steady during the first half and were below a year earlier. Prices have risen slowly this summer and autumn, but part of the wholesale and farm price increases have been absorbed by a narrowing of margins. The 1986 average will be close to last year's, the first time in about 2 decades with essentially no rise. Retail prices in 1987 probably will be up only 1-3 percent.

Dairy Sales Still Strong

Data for recent years clearly demonstrate that commercial use of dairy products responds to declining real retail prices and economic growth. The size of recent increases also implies that sales expanded promotion may also have been important. Although gains slackened this summer, commercial use will be about 3 percent higher this year. Since 1983, sales have grown 10 percent. Conditions probably will stay generally favorable in 1987. However, economic growth has been a little sluggish, and gains in sales may slow to 1-3 percent next year.

The surge in commercial use in recent years has been unusually broad. Sales in almost all major categories have been strong. Cheese and fluid products posted sizable gains this year. Butter sales have about matched last year's strong level, while commercial disappearance of nonfat dry milk has been higher. Sales of frozen desserts have increased, but cottage cheese use has been steady.

Commercial Stocks Low

Commercial stocks have been at low seasonal levels since late spring. Low stocks played a role in the size and timing of wholesale price rises this year. This year's better-balanced market might have functioned more smoothly if additional stocks had been available. Like last year, yearend commercial holdings will be below 5 billion pounds. Rebuilding these stocks will absorb some of next winter's surplus.

Government Purchases Down

After heavy purchases during the first half of 1986, surplus removals fell far below a year earlier this summer and fall. During August-November, net purchases came to about 400 million pounds, less than the monthly sum for any of the corresponding months of 1985. The annual total probably will be 10-11 billion pounds, down from more than 13 billion in 1985. Like most recent years, purchases of nonfat dry milk were large relative to the butter surplus. Removals in 1987 currently are expected to be 4-7 billion pounds.

In mid-November, uncommitted inventories were equivalent to 8.2 billion pounds of milk, down 8 percent from a year ago. Continued heavy donations and lower expected purchases imply that government holdings will be down sharply by late 1987.

World Dairy Situation

Despite the use of supply control measures in many major dairy countries, world supplies of dairy products remain large. Milk production in the 38 selected countries is expected to be up 1 percent this year. Mexico, India, and the USSR posted large increases, but output in Eastern Europe and Brazil was down. In 1987, milk output may hold about steady, if expected declines in the U.S. and the EC materialize.

World trade in dairy products has suffered in 1986 as demand by most importing countries continues weak. Exports (excluding EC-intra trade) for

butter, nonfat dry milk (NDM), and casein are declining from 1985 levels while cheese exports remain nearly unchanged. The outlook for 1987 is for increased exports of butter (which includes butteroil) and cheese while NDM and casein exports are projected to be about the same. International prices for butter, butteroil, and cheese are down this fall as competition among suppliers remain intense. NDM and casein prices continue to be quite stable. World stocks of dairy products will continue to be burdensome in 1987 and competition for export sales and a "buyers market" will likely keep prices down next year.

Summary

The story of 1987 will be written during the second half of the year, since early 1987 will still be dominated by the effects of the DTP. By this time next year, surpluses could be building back towards very heavy levels. Or, market price rises could indicate a period of reasonable supply-demand balances. The key question is whether the downward adjustments to the support price have been enough to establish a lasting balance in the dairy markets.

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DAIRY OUTLOOK

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Final Estimates for 1986:

A brief projection of final milk production and consumption figures for 1986 are necessary to project changes for 1987. It appears that milk production for 1986 will total over 145 billion pounds, exceeding the previous record of 143.7 billion pounds produced in 1985 (Table 1). Although the Dairy Termination Program (DTP) has had a major impact in reducing milk production during the last half of 1986, the 4.9 percent increase for the first six months will result in increased production for the year.

Table 1. U. S. Milk Supply and Utilization, 1985-1987

	<u>1985</u>	<u>1986^{*/}</u>	<u>1987^{*/}</u>	<u>Change</u> <u>1985-86</u>
	---Billion pounds---			%
Production	143.7	145.2	143.8	-1.0
Farm Use	2.5	2.4	2.4	
Marketings	141.2	142.8	141.4	
Beginning Commercial Stocks	4.9	4.6	4.5	
Imports	2.8	2.8	2.8	
Total Supply	148.9	150.2	148.7	
Commercial Disappearance	131.1	135.0	137.7	+2.0
Ending Commercial Stocks	4.6	4.5	4.5	
Net CCC Removals	13.2	10.7	6.5	-39.3
Total Utilization	148.9	150.2	148.7	
	---dollars per hundredweight---			
Farm Price, All Milk	\$12.75	\$12.30	\$12.35	
Average Assessment	.13	.36	.19	

^{*/}
- Estimates

Commercial milk sales will total around 135 billion pounds for 1986, up almost 3 percent from the 131.1 billion pounds of sales for 1985. Increased commercial sales are primarily the results of relatively favorable retail

dairy prices and the increased activities of dairy advertising and promotion.

Despite an increase in milk production, strong commercial sales will reduce CCC purchases under the price support program to less than 11 billion pounds of milk equivalent for the year, compared to 13.2 billion pounds of purchases during the previous year.

Farm milk prices for 1986, although strengthening during the last four months of the year, will average around \$12.30 per cwt., 45 cents below a year ago. Producer assessments due to the DTP and Gramm-Rudman-Hollings will average 36 cents per cwt. for 1986 compared to only 13 cents for 1985.

Outlook For 1987:

Table 1 shows estimates of what the author believes are most likely milk production and commercial sales for 1987. Final figures naturally may deviate on either side of those given in the table.

Milk Production:

Milk production for 1987 could range from 141 to 145 billion pounds depending upon milk cow numbers and milk per cow. Nevertheless, indications are that production will decline below 1986 and could be close to the 1985 level, about 143.8 billion pounds.

a) Milk cow numbers:

Milk cow numbers on January 1, 1987 should total less than 10.7 million head, down 4 percent from January a year ago. Milk cow numbers will continue to decline through 1987 and could average around 10.4 million head for the year.

The main factor for the decline in milk cow numbers is the DTP. The full impact of the DTP will be felt in 1987. Over 53 percent of the dairy cattle to be eliminated under the DTP had been eliminated by September 30, 1986. The remaining milk cows under the DTP will be eliminated by August 31, 1987 with the majority of these being eliminated before that date. Thus, the DTP will be for the most part fully implemented during the first half of 1987. This is particularly relevant since more than half of the milk for a given year is normally produced during the first 6 months. The DTP had little affect on milk production during the first half of 1986 because it did not begin until April 1st. This fact alone suggests the possibility of lower production in 1987 than 1986.

A second factor reducing milk cow numbers in 1987 is the culling rate. The culling rate could increase due to some strengthening of the price of culled cows and an increase in dairy farm auctions (other than DTP). The increase in farm auctions is the result of continued financial stress. Not all cows are sold to continuing farmers at an auction. The lower producing, unbred, and older cows are frequently culled. Thus, through auctions the milk cow

herd will decline further in 1987.

b) Milk per cow:

Milk production per cow should average about 13,357 pounds for 1986, up 2.5 percent from 1985. An increase of 3 to 3.5 percent more milk per cow for 1987 seems reasonable. Improved genetic potential, improved management and a favorable milk-feed price ratio all indicate this degree of increase for 1987. Due to large supplies, it appears that grain and concentrate prices will average lower in 1987 than in 1986. With average milk prices at or slightly higher in 1987 than 1986 the milk-feed-price ratio will remain favorable to the feeding of grain and concentrate to milk cows. In addition, except for the Southeast, a relatively large supply of hay exists and hay prices will average below 1986 levels.

In summary, an increase of at least 3.5 percent more milk per cow appears likely for 1987. This would put average 1987 milk production per cow around 13,825 pounds.

c) Total production:

Although 1987 milk production could fall as low as 141 billion pounds or be as high as 145 billion pounds, if the above milk cow numbers and milk per cow assumptions are correct, milk production for 1987 would total about 143.8 billion pounds.

Commercial Disappearance:

Commercial milk sales will continue to increase in 1987 and could range from 137, a 1.5 percent increase, to over 138 billion pounds, a 2.5 percent increase. Nevertheless, it seems likely that 1987 sales will increase at a slower pace than what has occurred over the past three years. Rather than an annual increase of 3 to 3.5 percent, an increase of around 2 percent appears more likely. Advertising and promotion will continue to have a positive affect on sales but will not result in the same relatively large increase that occurred when increased expenditures for these activities were implemented more than two years ago. In addition, although retail dairy prices will remain favorable for 1987, they are likely to average higher than the stable 1985-1986 prices, possibly 1 to 2 percent higher.

A likely 2 percent increase will put commercial sales at 137.7 billion pounds for 1987.

Net CCC Removals:

With the above projections of milk production and commercial sales, net CCC purchases under the dairy price support program for 1987 would be around 6 billion pounds of milk equivalent compared to 10.7 billion of purchases in 1986 and 13.2 billion in 1985.

Farm Milk Prices:

Under the Food Security Act of 1985, the support price will be reduced 25 cents on January 1, 1987 to \$11.35 per cwt. This January 1st reduction will have a lowering effect on milk prices. Although milk production will be below year ago levels on a monthly basis, it will be recovering from the fall seasonal low. In addition, commercial sales normally slacken after the peak holiday demand period of Thanksgiving and Christmas. As a result, farm milk prices will decline during the January through May period. The Minnesota-Wisconsin (M-W) price will decline during this period and could even fall as much as 10 cents below the \$11.35 support price by April or May. This would be in contrast to the mid-1985 to mid-1986 period where the M-W price averaged 22 cents below the support price.

The support price will be reduced another 25 cents to \$11.10 per cwt. on October 1, 1987. This cut will not affect milk prices at this time. The tightness in milk supply and demand during late summer and fall will once again post a significant seasonal increase in farm milk prices during second half of 1987. For all of 1987, farm milk prices could average slightly higher than 1986 to around \$12.35 per cwt. Effective producer prices will improve even more so because of lower assessments, an average of 19 cents per cwt. for 1987 compared to 36 cents in 1986. This improvement of course is in the absence of any further actions under Gramm-Rudman-Hollings.

Outlook For 1988-1990

The significant number under the Food Security Act of 1985 for the years 1988-1990 is 5 billion pounds. During this period if net CCC removals of dairy products are estimated to exceed 5 billion pounds of milk equivalent for a given year, the Secretary of Agriculture under current legislation has the authority to cut the support price 50 cents per cwt. for that year.

A sharp increase in milk production at the termination of the DTP will not be as sharp as was the experience with the previous Dairy Diversion Program (DDP) for the following reasons. One, with the DTP entire herds were eliminated and facilities and producers are required to remain out of dairy for 5 years. The majority of these producers will never re-enter dairying nor will the facilities without major renovation. Second, it appears that participants in the DTP were not primarily those under severe financial stress. Many farmers under financial stress submitted bids beyond the acceptance level. A number of these remaining dairy farmers under financial stress will exit dairying over the next one or two years, especially if the support price is further reduced and milk prices decline. Third, the potential for additional cuts in the support price and resulting lower milk prices may discourage expansion in dairying. Financial institutions are hesitant to lend additional monies for expansion.

Despite the more permanent affect of the DTP, milk production will increase during the 1988-1990 period. The degree of increase will depend heavily upon input prices, mainly feed, new production technologies, and the potential increases in milk production per cow. Feed prices could conceivably decline further under current farm legislation with normal weather. Even with changes

in legislation, grain and concentrate prices over the next 2 or 3 years are likely to remain relatively favorable to the continuation of existing feeding levels by dairymen.

Milk production per cow has the potential of increasing 3 to 4 percent annually over the next 5 years due to genetic potential (about 140 pounds more milk per year) and improvements in feeding and management (about 150 pounds more milk per year). New technologies such as BGH could add to this a one-time boast. At this time it is uncertain as to when BGH will be commercially available and to the extent of its impact on milk production.

Milk cow numbers are likely to decline annually during the 1988-1990 period and beyond. Farmers will be exiting due to retirements, other voluntary exits, and financial stress. However, annual increases in milk per cow will more than offset the decline in milk cow numbers resulting in increased milk production.

Commercial milk sales will also increase annually over the foreseeable future. The relative increase however, will be less than the unprecedented increases over the past 3 years. Annual increases of between 1 and 2 percent appear likely for the immediate years ahead. Such increases in commercial sales may be insufficient to offset annual increases in milk production.

It appears that with no changes in dairy legislation nor the implementation of the Secretary of Agriculture's authority under the Food Security Act of 1985 for another DTP or DDP during 1988-1990, milk production increases in comparison to commercial sales will result in more than 5 billion pounds of net CCC removals in 1988, and possibly for 1989 and 1990 as well. An additional 50 cent cut in the support price seems likely for January 1, 1988 with the two additional cuts on January 1, 1989 and 1990 less certain. Again, what happens to input prices and the resulting cost-price squeeze on farmers in financial difficulty is a key here.

With no change in farm legislation, farm milk prices will average lower than 1987 prices during the 1988-1990 period. Average milk prices of 50 cents to \$1.00 per cwt. lower are possible.

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DAIRY MARKETING ISSUES

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I am a subscriber to the pendulum school of economic forecasting, which means that when most projections start moving too far in one direction, one should seriously think about moving in the opposite direction. I have some concern that the pendulum theory may be applicable to some of the optimistic forecasts being made about milk production and government purchases for 1987. Many analysts are projecting milk production next year to be down about 2 percent with CCC purchases falling into the 5-6 million pound range, primarily in response to the Dairy Termination Program (DTP). I hope that these projections are right. There are some economic signs that indicate we may not have yet really turned the corner on surplus milk production, nor reduced the incentive to produce too much milk.

The single biggest question we face as we project out to 1987, of course, is: What will the non-participants in the herd buyout do? This big question mark makes the 1987 production outlook particularly uncertain. Projections by USDA and others indicate that the expansion by non-DTP farmers will be moderate, thus leaving milk production and CCC purchases in 1987 below 1986 levels.

With only some slight modifications in those assumptions, however, one could easily argue that milk production will be very close to 1986's record levels and government purchases will still be in the 8-9 billion pound range. How could this come about? Admittedly, during the first half of 1987 there will not be a great deal of room for showing different effects as cow numbers decline. The real difference will be what happens during the second half of 1987.

If non-participants go into a real expansion mode, which is an actual possibility, we would expect to see cow numbers hold steady during the first half of 1987 and start increasing in late summer. Culling rates have been averaging about 29 percent in recent years, but if this rate were to drop to a more normal 25 percent, this would keep about 400,000 cows in the herd. There are probably enough heifers available to support this. But, let's assume this is too extreme and we only add 200,000 cows or roughly 2 percent of the herd. This would still leave us with about 10.6 to 10.7 million cows for 1987. If we

further assume that output per cow will increase by about 2 percent in 1987 to 13,600 pounds, this would result in a milk production total of 144.2-145.5 billion pounds, very close to that of 1986. And if the recent, rather dramatic increases in commercial use moderate, as many expect, to something in the 1-1/2 to 2 percent range, this would suggest government purchases will total 8-9 billion pounds.

How can a scenario like this be supported? Next year we are looking at large supplies of most feeds at very favorable prices. Corn supplies will be plentiful and forage readily available. The milk feed price ratio is now about 1.7 and is likely to remain very favorable through most of 1987, indicating continued high levels of concentrate feeding.

Another big factor in this analysis is the relative profitability of dairy farming, both in comparison to a year earlier and to other farm alternatives. In USDA's most recent milk production cost report, it showed that total cash expenses for milk production were down almost \$1.00 in 1985 to \$9.74 from \$10.64 per hundredweight (cwt.) a year earlier. Even with the lowering of the milk price support by \$1.00 per cwt. in 1985, returns to owned inputs were up by 10 cents per cwt. in 1985 compared to 1984. While data for 1986 are still not readily available, costs of most major items were down further in 1986 with crop prices, energy costs and interest expenses leading the way.

With moderate inflation projected for 1987, lower feed and fuel costs and a lack of viable farm alternatives, there will be a strong incentive to continue to produce too much milk. We have drawn this scenario not because this is the direction we wish it to go, but as a caution against undue optimism that the surplus problem is solved.

The 1985 Farm Bill started us in the right direction, and the buyout program may buy us a year or so, but the underlying economic incentives to produce too much milk, I am afraid, are still there. The price adjustments contained in the Farm Bill are our insurance policy to guarantee that the right signal will be there if the surplus problem persists. We certainly do not need a supply management program. The Farm Bill amendments will do the job if they are not interfered with.

Now I would like to change the focus of my remarks to coincide with the topic assigned ... dairy marketing issues. This is an area where much, much more work is needed. With so much emphasis placed on how to control production, marketing, until recently, has often taken a back seat to other dairy issues.

A consistently bright spot in the dairy industry in recent years has been the dramatic growth in commercial use. After many years of 1 to 2 percent gains, we have recently witnessed three consecutive years with increases of more than 3 percent each year. What is even more heartening, is that this growth has been spread over a large number of dairy products. For the first six months of 1986, for instance, we experienced an overall growth in dairy product sales of 4 percent compared to a year earlier. American cheese sales were up 6 percent; butter sales up 5 percent; ice cream sales up 2.5 percent; and, while total fluid milk sales were up only 1.3 percent, skim and lowfat milk sales were up almost 6 percent.

While there are a number of factors responsible for this widespread growth, the single biggest factor may be the fact that, over the past few years, dairy products have been a good buy relative to other foods and beverages. Although the consumer price index has increased by a factor of 3.3 to 329 since 1967 and the index for all food and beverage items stands at 314, the dairy product price index has held fairly steady at about 258. Dairy products are a bargain compared to other food items. The price index for cheese, for instance, now stands at 151 compared to 270 for beef and 293 for pork. The index for whole milk stands at 227 compared to 322 for cola drinks. Favorable prices for dairy products have led the way in boosting dairy product sales.

Another factor that has helped sales is the emphasis on marketing and the focus on consumer lifestyles. We have seen this with many dairy products, particularly in the cheese, ice cream and yogurt markets, as companies develop products to meet changing lifestyles.

In the industries we represent (beverage milk, yogurt, cottage cheese and ice cream), we, too, have been guilty for many years of "slighting" our marketing efforts. The ice cream industry in recent years has enjoyed rapid growth. After a long period of hibernation, the industry has awakened with a mighty leap and is enjoying some of its best years. The ice cream industry is rapidly becoming one of marketers, instead of just manufacturers. The ice cream industry has greatly segmented its market and now there is an ice cream for every age group, every lifestyle and every pocketbook.

The ice cream novelty market has become even more segregated than the packaged market. We now have adult novelties, bite-size novelties, juice bars, gourmet bars, and all variations of these, plus all the traditional products. An even bigger development is the repositioning of the industry's thought process to acknowledge that novelties are a part of the \$6 billion snack market. This bodes well for this part of the ice cream industry. The competition for novelties is not just other ice cream products; it is all other snacks, like soft drinks, juices, candy, granola bars, etc. These changes can be attributed directly to the emphasis placed on marketing.

Now I would like to concentrate on beverage milk, a product that utilizes the largest segment of the total milk supply, about 36 percent. This, I believe, is the greatest untapped potential for marketing and sales in the dairy industry, and there is still an enormous amount of work that needs to be done to market beverage milks effectively.

In the United States, total beverage consumption is increasing at about 1.2 percent per year, with soft drinks enjoying the largest rate of increase recently, about 4.4 percent. Alcoholic beverages had strong growth in the 1960's and 1970's, but in recent years, with the exception of wine, have been relatively flat. Milk consumption has been fairly stable, but, as a percent of the total beverage market, has lost shares to other beverages. In 1960, milk consumption accounted for about 14 percent of the total market and ranked third as a beverage behind water (39 percent) and coffee (20 percent). Soft drinks accounted for only 9 percent of the market in 1960. By last year, however, the soft drink share had nearly tripled to almost 27 percent of the total beverage market. The major losers were water (down 38 percent), coffee (down 33 percent) and milk (down 22 percent).

On a per capita basis, there has been virtually no change in the consumption of non-alcoholic beverages since 1960. The 10-gallon increase in per capita consumption of all beverages was a result of increased consumption of alcoholic beverages, principally beer and wine. While the per capita consumption of non-alcoholic beverages has remained relatively flat, there have been significant changes in the make-up of that category. Soft drink consumption (51 gallons per person) now exceeds water consumption (47 gallons). The big winners over the past 25 years have been soft drinks, beer, wine (which started from a small base) and fruit juices/drinks. The big losers have been water, coffee and, again, milk.

What is behind these trends? Beverage milk today is a relative bargain compared to other beverages as the following table demonstrates:

HOW MUCH CONSUMERS SPENT PER GALLON

	<u>1970</u>	<u>1985</u>
BEER	\$2.31	\$5.01
FRUIT JUICE/DRINK	1.52	4.65
SOFT DRINKS	1.16	3.15
MILK	1.12	2.29

I would argue that the level of advertising and promotion has had a lot to do with these trends. In 1985, beer topped the list of beverage advertising expenditures with \$774 million - six times the 1970 level. Soft drink advertising was next with \$505 million -- four-and-a-half times the 1970 level, followed by coffee (\$185 million) and fruit drinks (\$150 million). Milk is a distant fifth at \$45 million and is less than ten percent of the advertising spent on soft drinks.

On a per gallon basis, milk advertising also ranks low, only 1 cent per gallon, compared to 14 cents per gallon for beer, 6 cents per gallon on fruit juices and drinks, 4 cents on soft drinks and 3 cents spent on coffee.

And what about future advertising expenditures? Beer advertising is projected to level off somewhat, soft drink advertising will continue at a rapid pace, and fruit juice and drinks will increase substantially. We cannot let milk advertising remain the same.

The answer is clear. We must respond with innovative and creative marketing programs to meet the challenge, and MIF, through input of its member companies' marketing experts, has moved to meet this exciting challenge. Our newly initiated milk and cultured products marketing research project will provide fluid milk companies with data they can immediately use to improve their existing marketing programs or assist in developing new ones.

Our research will determine which household members consume whole, lowfat, skim and flavored milks, when they consume these products, and why, who influences the purchase decision for each product, and a whole range of other data. With this information, companies will be able to develop strategic

marketing programs that position their various fluid milks to the appropriate consumer segments. The study will identify non-user, as well as user attitudes, and the benefits and attributes consumers associate with the various milks as opposed to competitive alternatives. Similar information will be obtained for yogurt, cottage cheese and sour cream.

These survey results will be available by next spring -- in time for companies to incorporate the results into next year's marketing programs. We are also discussing the development of a cooperative generic and branded advertising program for fluid milk with the dairy farmer organizations responsible for generic advertising programs. We are just in the discussion stage, but there appears to be a great deal of interest and I am optimistic that the total effort to do a better marketing job and sell more beverage milk products is just around the corner. The effort would involve processors committing new monies to advertising their fluid milk brands, with the expenditure of equivalent new funds by the dairy farmer organizations. The incentive of support from the dairy farmer organization should spur a tremendous increase in branded advertising expenditures. This, when combined with generic programs, should work to expand the total market for fluid milk.

Further, now is the time to act because of the particularly positive consumer attitude toward milk and concern with calcium, and overall nutrition and health.

Both the National Dairy Board and the United Dairy Industry Association have expressed enthusiasm with the program, and we are continuing to work to develop this concept. The goal of this new program is to increase fluid milk consumption by effectively competing in the \$122 billion beverage industry.

Thank you.

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OUTLOOK FOR CATTLE

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Beef production in 1987 is expected to decline due to herd reductions since 1982, the end of the largest Dairy Termination Program (DTP) slaughter, and a shift toward cattle inventory stability over the next couple of years. Stronger cattle prices, lower production costs, and abundant forage supplies in most areas will help begin to set the stage for herd stability. However, continued near record large total red meat and poultry supplies, plus an expanding but still sluggish economy, are expected to hold down price gains for the relatively more expensive beef.

Factors Affecting the Cattle Industry

Sluggish Economy Continues

Sluggish economic growth as measured by real Growth National Product (GNP) continued in 1986. GNP grew at the same lethargic rate in 1986 as in 1985, about 2.5 percent. Growth is expected to improve somewhat in 1987, but this growth is predicated on an improvement in the net export deficit. Without this improvement, growth in 1987 would likely be near to slightly below the sluggish 1985-86 levels.

Even with somewhat stronger growth in 1987 it will likely be sometime later before the manufacturing, petroleum, and agricultural sectors improved sufficiently to increase consumer purchasing power and with it meat demand. Improved consumer confidence, reductions in the large consumer debt load, and some improvement in savings rates are necessary before a stronger resurgence in meat prices occurs, particularly the relatively higher priced beef.

Meat Supplies Remain Large

Total red meat and poultry supplies will remain near record large in 1987. In 1970 through 1985 red meat and poultry supplies averaged 204 pounds per capita. Consumption averaged near this 204 pound level in 1982, but in each subsequent year through 1985 a new record was set--peaking at nearly 215 pounds per capita in 1985. Supplies in 1986 will be near record large, and supplies in 1987 are likely to decline about 2 pounds per person. However, this lower level will still be the third largest on record. Sharpest year-to-year reductions will occur in first-half 1987, a time when the trade deficit improvement will just begin to support stronger economic growth.

Poultry production is likely to rise about 8 percent in 1987 with a fairly uniform expansion throughout the year. This is in sharp contrast to the pork sector where first-half production is likely to be 8 percent below year-earlier levels, but expanding fairly dramatically in the second half of the year and into 1988. Improved returns in 1986/87, lower production costs, and lower meat supplies, primarily beef, will encourage continued expansion in the poultry sector, expansion in the hog sector, and stabilizing cattle numbers. Burdensome meat supplies are likely to be more of a problem in the future than are the likelihood of meat supplies dropping below recent levels.

Production Costs Decline

Large feed and forage supplies, plus continued low inflation rates will result in lower production costs in 1987. Interest rates have declined from 10 percent in 1985 to about 8.5 percent in 1986 and may remain about unchanged to down slightly in 1987.

Continued large grain supplies and prospects for supplies to remain large in 1987 should result in further downward adjustments in feed costs. Even though feed grain production in 1986 was nearly 9 percent below the record 1985 harvest, stock levels remain large. Grain stocks at the beginning of 1986/87 were record large. Thus, in spite of the reduced harvest this fall, beginning supplies are 14 percent above a year ago. Use this crop year is likely to be about unchanged from a year ago, thus ending stocks are likely to rise 33 percent above the 1985/86 record. U.S. feed grain exports are expected to rise from the low 1985/86 levels. However, world feed-grain production this year is forecast to be the second largest ever, and only 17 million tons below the 1985/86 record. While U.S. production is expected to decline about 23 million tons, foreign production may expand by about 6 million tons. Thus continued large domestic feed grain stocks and expanding production in other countries are likely to result in continued lower feed costs to livestock producers.

Corn prices have declined since May due to prospects for record harvest yields, sluggish exports, and declining farm loan rates. The farm price of corn has been averaging 35 percent below a year ago this fall. Corn prices this fall are the lowest since 1972. In 1986/87, the farm price of corn may average \$1.35 to \$1.65 per bushel. The loan rates of \$1.92 and target price of \$3.03 for program participants in generic certificates increase free stocks thus increasing available supplies and lowering prices to domestic users and the export market. Generic commodity certificates are used as partial payments for feed grain and wheat program advance deficiency and diversion payments. Corn prices in 1986/87 are expected to average \$1.35 to \$1.65 per bushel, but export demand and tender of certificates for grain may have a strong influence on price patterns this year.

Forage conditions have been rebuilt in almost all areas, with record supplies available in many areas. Pasture and range feed conditions on November 1 were rated at 85 percent, 6 points above a year ago, and 11 points above the 10 year average. Pasture conditions in the Southeast are much improved, but remain in the poor range. Small grain pastures are doing well in these areas and with a normal winter should provide much needed forage supplies for the reduced cattle inventory.

Hay production in 1986 was a record large 158 million tons, up 6 percent from a year ago. Thus, large carryin stocks plus a 3 to 5 percent decline in roughage consuming animal units in 1987 should provide adequate hay supplies in most areas. Farm price of hay in November averaged \$56.50 a ton, down \$9 from a year earlier.

In addition to accumulated pasture and range growth in most areas, a record hay crop, and prospects for good small grain pasture growth, millions of acres of cropland pasture is available for grazing under the Food Security Act of 1985. While this pasture is not needed in most areas, it does provide a forage reserve which could be used to support cattle numbers even if forage conditions deteriorated.

Cattle

Inventory Adjustments Near End

1987 is likely to mark the beginning of a shift to beef herd stability over the next couple of years and an end to an extended and extremely difficult inventory adjustment period for the cattle industry. However, a return to a typical cyclical inventory movement is not likely until the 1990's as external factors continue to mute the biological adjustments. The major adjustments occurred in the 1970's, with an unprecedented buildup in the cattle inventory peaking at a record high 132 million head in 1975, followed by an unprecedented liquidation which ended in 1979 at 110.9 million head. The cattle inventory then rose to 115.4 million head in 1982. However, 1982 through the summer of 1986 was a period of continued downward inventory adjustments. There was a severe drought in many cow-calf areas in 1983 and 1984, and to a lesser extent in 1982 and 1986. Efforts to reduce excess production in the dairy sector occurred in 1984 and again in 1986, resulting in a whipsawing of dairy cattle slaughter--heavy in 1984, light in 1985, and heavy again in 1986. Government meat purchases offset increased beef production from the DTP slaughter in 1986. In addition, the Payment-In-Kind program in 1983 to reduce grain production and thus burdensome stocks, resulted in sharply higher grain prices, particularly when drought further reduced crop production. At the beginning of 1987 the cattle inventory will likely have declined another 4 percent from a year earlier. These herd reductions, more normal weather conditions, and recent policy decisions are beginning to join in producing a more positive, but still cautious outlook for the beef sector. Net returns to cow-calf operations and cattle feeders have increased and both are expected to cover cash costs in 1986. While these returns will not encourage many producers to re-enter the industry, they will likely support a tentative expansion on existing cow-calf operations.

Forage conditions this fall are much improved and well above the 10-year average. Hay stocks are near record large this fall. Recent rains have bolstered the outlook for small grain pastures in much of the summer-drought impacted Southeast. More moisture is needed but timely rains have the small-grain winter pastures off to a surprisingly good start. Given reduced cattle inventories, forage conditions throughout most of the country appear at least adequate to carry the herd through even a worse than average winter. In addition, the Food Security Act of 1985 has already sharply reduced grain prices with more moderate reductions possible through the end of the decade.

Finally, the uncertainties of the Dairy Termination Program (DTP) are now mostly behind us. In fact, the dairy herd in early fall was 4 percent below a year earlier. A lower dairy cow slaughter is likely later this fall and through 1987 than would have occurred without the DTP.

Adjustments underway indicate that the major portion of the beef herd liquidation may now be behind us leading to lower beef supplies and consumption and increased beef prices. However, already large total meat supplies are expected to expand in 1988 from the moderately lower levels in 1987. The impact of these larger meat supplies will be to markedly slow the rate of any beef herd expansion through at least the early 1990's.

Slaughter Transition Begins

Third-quarter figures indicate that the recent cattle liquidation which began in 1982 may be drawing to a close. Cattle slaughter was 3 percent above summer 1985 levels, but production was up only 2 percent due to lower slaughter weights because of increased nonfed slaughter. The first period of the DTP with its high levels of dairy cow slaughter passed. DTP cattle slaughter in the second and third periods will be sharply lower. Both cow and nonfed steer and heifer slaughter were well above a year ago this summer due to the DTP. January through October dairy cow slaughter was 35 percent above a year ago. Weekly dairy cattle slaughter reported under the program in the first two months of the second period was less than half the weekly average during period one. Beef cow slaughter through October was 3 percent below a year ago, while total cow slaughter was 12 percent higher.

Government meat purchases have more than offset the additional DTP slaughter and helped support cattle prices. Although beef production this summer rose nearly 2 percent over a year ago, cattle prices moved well above year-earlier levels. Prices for Choice fed steers and Utility cows at Omaha this summer averaged about \$9 and \$2 above a year earlier, respectively, while prices for yearling steers at Kansas City averaged about \$3 higher. Continued lower pork supplies, and sharply smaller nonfed beef supplies are likely to continue to support stronger cattle prices in the coming months.

Recent slaughter numbers indicate the mix is beginning to shift. In October, even though cattle slaughter was 1 percent above a year earlier, female slaughter declined 6 percent. Heifer slaughter was 8 percent below a year ago, while cow slaughter declined 4 percent. Female slaughter is expected to remain well below year-earlier levels as the largest DTP slaughter is past and cattle inventories have declined about 4 percent from a year ago. Even though female slaughter is expected to decline from recent large levels, the proportion of the slaughter mix will likely suggest stabilizing cattle numbers over the next few years rather than a strong expansion. This shift towards stability will begin following 6 consecutive years of declining calf-crops, and beef production in 1987 falling well below 1986 levels. Even though beef production is expected to decline, fed cattle marketings will remain large as a greater proportion of the feeder cattle supply is placed on feed.

Fed Beef Supplies To Remain Large Through Spring

The number of cattle on feed on October 1 was the third smallest inventory for this date since 1970, although 3 percent above the record low of a year ago. Near-record high placements and marketings this summer were partially offsetting resulting in continued low fed cattle inventories. Cattle on feed on July 1 were 8 percent below a year earlier, but third-quarter fed cattle marketings declined only 2 percent. Increased marketings occurred as cattle continued to be placed on feed at heavy weights with many of them in fleshy grass-fat condition. A record large 74 percent of the cattle on feed at the beginning of the quarter were marketed.

Placements this summer were a near record large 6.1 million head, the largest since 1978. Feedlots remain current although placements this summer were heavy. A larger than normal proportion of the October 1 inventory are likely to be marketed this fall. Producers indicated they intend to market 3 percent more fed cattle this summer than a year ago in the 13 States, and it appears marketings could rise 3 to 4 percent from a year ago. This implies marketing about 66 percent of the beginning inventory, compared with an average of 63 percent since 1981.

Placements are expected to remain large this fall as fed cattle prices rise and grain prices continue well below a year ago. However, even as Corn Belt feeders begin to place more cattle on feed as the fall harvest ends, placements for the 13 States are likely to total somewhat less than a year ago. Feeder cattle supplies were drawn down sharply this summer and competition between feeders and stocker operators for the reduced supply is likely to intensify.

Yearling Feeder Cattle Supplies Plummet

Feeder cattle supplies outside feedlots on October 1 were 7 percent below a year ago. The sharpest declines occurred in the number of feeder cattle weighing over 500 pounds--a 17 percent drop. Continued declines in the calf crop resulted in a 4 percent drop in the feeder calf supply. Nonfed steer and heifer slaughter was also large this summer, due in part to dairy heifers slaughtered under the DTP and also due to some grass-fat feeder cattle going directly to slaughter. This drop in yearling supplies will help strengthen feeder cattle prices this fall as grain prices remain well below a year ago, particularly in the Western Corn Belt, and cattle feeding interest increases as the fall harvest is completed. Placements in Iowa rose 41 percent above a year ago this summer, but this increase was from very low levels. Placements in Illinois and Minnesota were up only 13 and 5 percent, respectively. Competition for the smaller supply of feeder cattle, particularly calves, is also likely as favorable forage conditions will encourage cow-calf producers to carry more of this year's calf crop through the winter. Demand is also likely to increase from stocker operators, particularly where diversion acreage can be grazed.

Production Prospects

Beef production in 1987 is expected to drop 5 to 7 percent below this year's level. Sharpest year-to-year declines will occur in the second and third quarters. This is largely due to the large DTP slaughter during the spring and summer of 1986. Although total production is expected to decline, nearly all of the drop will occur in the nonfed slaughter categories. Total fed cattle marketings are expected to remain in the 25.5 to 26 million head range which has existed since 1983. Sharpest year-to-year declines will occur in cow slaughter, given the lower beef and dairy cow numbers and expectations that the beef breeding herd may begin to stabilize. A stronger economy, or greater price impact from reduced beef supplies in 1987, could result in even lower nonfed slaughter and higher proportion of steers and heifers being placed on feed. Slaughter weights are likely to remain near record large in 1987. Fed cattle will represent a larger proportion of the slaughter mix next year which would suggest even heavier weights. But cow slaughter weights are likely to drop as the dairy proportion declines, thus partly offsetting the increase in fed cattle in the slaughter mix.

Price Rises to Moderate

Prices for Choice fed steers at Omaha have risen from \$54 per cwt in June to the low \$60's this fall. During this period, 400-500 pound calves and 600-700 pound yearlings at Kansas City have risen from \$65 to near \$70 and from \$58.50 to the mid \$60's, respectively. Utility cow prices at Omaha averaged near \$38 this year. Prices dropped to \$36 per cwt in April as the DTP was announced, soon recovered and otherwise remained fairly stable throughout the year. Fed cattle prices may rise to the mid \$60's next spring, but further price rises, even with the reduced beef supplies will be difficult. For the year, prices may average about \$62 to \$68. Total meat supplies will remain large, as poultry supplies continue to rise. Larger supplies of relatively lower priced poultry will hold down gains particularly as beef prices rise. The farm-to-retail spread narrowed to \$1.02 this summer, and while some further reductions are possible, this is near the average spread in recent years--excluding 1985. Thus, further cattle price increases are likely only as retail beef prices rise. Retail prices may increase to the low \$2.40's in 1987, up from about \$2.32 in 1985 and 1986. Thus retail beef prices are expected to return to near the average of the early 1980's when per capita beef supplies were 4 to 5 pounds larger. The beef check off and with it beef promotion and more information may lend some support to the beef sector, but likely not during 1987.

While nonfed beef supplies are expected to drop, supplies of fed beef which comprise the base for the Choice retail beef price, are expected to remain large through 1987. Pork prices have already risen over 20 percent since the spring lows, making pork less competitive with beef. Only modest changes are expected in the recent sluggish economic growth, thus consumers are likely to remain price sensitive, particularly for the more expensive beef.

Feeder cattle prices are expected to average about \$2 to \$6 above this years \$63 average due to the smaller supply, lower grain prices and increased demand from feedlot and stocker interests. Grain prices are expected to begin

to stabilize this fall, before rising seasonally. However, stronger fed cattle prices through next spring should support further price increases for feeder cattle with prices likely to peak in late winter and mid spring in the upper \$60's.

Moderate cattle price increases and continuing financial problems in many areas will hold down the rate of herd expansion continuing to make more heifers available for feeding. Many producers that liquidated their cattle herds in recent years to reduce debt and/or improve cash flow will not likely be able to generate additional cash flow to afford the capital investment to reenter the cattle sector. Feeder cattle supplies will continue to tighten as existing cow-calf operators cautiously begin to expand toward fuller utilization of their forage supply. However, the demand for female replacement stock for herd rebuilding is not likely to rise as dramatically as in past cycles. Only moderate feeder cattle price increases are expected thus holding down returns to cow-calf producers. An expected 7 to 9 percent rise in poultry production in 1987, and expanded pork production along with further poultry increases in 1988 are likely to hold down the prices cattle feeders are willing to bid for feeder cattle, particularly in second-half 1987. Thus this very sluggish expansion pace will also help bolster the supply of heifers available to go on feed.

Prices for Utility cows in Omaha are likely to average near \$40 per cwt in 1987, up about \$2 from 1986. Large supplies of poultry for processed meats throughout the year and larger pork supplies in the second-half will hold down price gains, despite sharp reductions in cow slaughter during 1987.

Veal Production and Prices

Veal production is expected to decline counter-seasonally this fall, as DTP adjustments slow, and feeder cattle demand increases. For 1986 veal production may average slightly above a year ago. Continued calf crop reductions in 1987, a smaller dairy herd, and strong feeder cattle demand are likely to result in next year's veal production declining 15 to 20 percent to near the levels of the early 1980's.

Prices for Choice veal calves at So. St. Paul have risen about \$12 per cwt since early spring. Prices in 1986 may average about \$60 per cwt, and may average near \$70 in 1987.

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OUTLOOK FOR HOGS AND SHEEP

Leland Southard

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In second-half 1986, hog producers returns have risen sharply due to the rally in hog prices and low feed costs. Net returns are near 1982 levels, when the last expansion phase of the hog cycle occurred. The outlook for 1987 is for relatively high net returns to continue because low feed costs are expected to continue and hog prices for the year are expected to be higher than in 1986. Given expected high net returns, the big question is not whether hog production will increase, but when and how sharp will those increases be. Increases in sustained profitability usually lead to an expansion of the breeding herd and a year-over-year increase in the number of sows farrowing with about a 6-8 month lag.

The September market hog inventory and farrowing intentions suggest that pork production may be below year-ago levels this fall and the first half of 1987. As a result of declining pork production, producers' returns are likely to remain relatively large due to higher hog prices and lower feed costs. But a previous long period of lackluster returns and continued financial pressure (especially for producers with large debt to equity ratios) will continue to hold gilt retentions lower than what might have been expected from historical relationships.

Implications for 1988

The policy change marked by the Food Security Act of 1985 and two large back-to-back corn crops have drastically lowered feed costs. At the same time, a continuing cutback in hog production has brought about a sharp rally in hog prices. As a result, producers' returns are among the highest on record and are expected to provide an incentive for expanding production. In past years, a comparable magnitude of positive returns would have triggered a double digit increase in pork production by late 1987. However, due to the prolonged earlier period of poor returns and financial problems, sharp increases in pork production are not likely to occur before late 1987 or early 1988. Even then, increases may be moderate, compared to historical standards.

The cattle inventory like the hog inventory has been declining in recent years. However, the sharp drop in grain prices should provide the incentive for continued large fed cattle marketings. But lower nonfed slaughter will

reduce total beef supplies. Poultry production is already responding to increased producer returns. Although beef production will continue to decline in 1988, poultry and pork production may more than make up this difference and push total per capita meat consumption toward 1985's record levels. This would imply, though, a sharp break in hog prices in 1988 if supply increases too quickly. However, if feed costs remain low, many large, efficient producers may still be able to cover cash production costs even if market prices decline considerably.

Inventory Down 5 Percent

The September 1 inventory of all hogs and pigs in the 10 quarterly reporting States totaled 39.6 million head, 5 percent below last year and the lowest September 1 inventory since 1975. The breeding inventory at 4.84 million head, was 10 percent below last year and the lowest September breeding inventory since 1973, when estimates for these comparable 10 States first became available.

The market hog inventory totaled 34.7 million head, 5 percent below last year and the lowest since 1975. The June-August pig crop was 15.9 million head, 6 percent below a year ago and the smallest June-August pig crop since 1975. Sows farrowing during June-August totaled 2.03 million head, 7 percent below last year. In March, producers indicated intentions to farrow about the same number of sows in June-August as a year ago, but in the June survey producers indicated intentions to farrow 8 percent fewer than a year ago. The breeding season for sows farrowing during June-August was February-April. From the first week in February to the first week of April, hog prices declined about \$5 per cwt probably discouraging producers from breeding more sows and gilts. During most of the breeding season, cash receipts were below cash expenses and replacement costs.

One factor holding up pork production in recent years has been an increasing number of pigs per litter. Pigs per litter averaged 7.79, compared with 7.73 in the comparable period last year. The 7.79 pigs per litter was a record high and continued gradually increasing trend. Pig per litter have shown a year-over-year increase for 9 consecutive quarters. Most of the increase is due to genetics and better management practices.

Farrowings To Remain Down Sharply

As of September 1, producers indicated intentions of having 2.06 million sows farrow during September-November, nine percent below the comparable period in 1985. If these intentions are realized, farrowings would be the lowest for this period since 1975. Moreover, farrowing intentions for December 1986-February 1987 are even lower, at 1.83 million head, 6 percent below a year ago. Recent higher producer returns raise the question of whether these intentions will be realized or whether actual farrowings will be higher? The most recent experience with high returns was in 1982. In September 1982, producers in the 10 quarterly reporting States indicated intentions to have 4 percent fewer sows farrow in December 1982-February 1983. However, the number of sows actually farrowing increased 6 percent from December 1981-February 1982. One factor that is different today is that financial problems for many of these producers have increased substantially

since that period. This could hamper producers ability to expand despite their improved returns.

Commercial Pork Production in 1987
is Expected to Decline Slightly

Commercial pork production in 1987 is expected to total 13,775 million pounds, down 1 percent from projected 1986 production. In 1986, production was expected to total 13,968 million pounds, down 5 percent from 1985. Commercial slaughter in 1987 is expected to be about 78.7 million head, down 1 percent from the projected 80 million head for 1986. The projected 1986 slaughter would be down 6 percent from 1985.

Hog slaughter in both the first and second quarters of 1987 is projected at 5 to 7 percent below a year earlier. Relatively cheap feed may encourage producers to continue feeding barrows and gilts to weights larger than the historical average. Packers will not likely discount the heavier weight hogs because of the tighter supply of slaughter hogs and genetic improvement reducing excess fat. From the September Hogs and Pigs report there were two indicators of first-quarter slaughter, the market hogs weighing under 60 pounds and the June-August pig crop. The market hog inventory was down 8 percent and June-August pig crop was down 6 percent. Over the past several years, the pig crop has been a more reliable indicator of slaughter than the market hog inventory. The average dressed weight may be about the same as a year ago. Thus, commercial pork production may total about 3,350 million pounds in the first quarter, down 6 percent from last year.

Commercial pork production in the second quarter may also total about 3,350 million pounds, down 6 percent from last year. Based on producers' September 1 farrowing intentions and a continued rise in pigs per litter, the 10-States September-November pig crop is estimated to be down about 7 percent. However, the number of sows farrowing nationally is not expected to drop as sharply as in the 10-States. The June 1 10-States breeding inventory accounted for a smaller proportion of the national breeding inventory in 1986 than in 1985. Thus, a smaller year-over-year decline is expected in the U.S. pig crop than in the 10-States.

Based on September 1 intentions and a slight rise in pigs per litter, the December 1986-February 1987 pig crop is projected to be about 5 percent below the comparable period in 1985-86. Commercial slaughter in third-quarter 1987 is projected at about 19 million head. The average weight is expected to be about the same as this year's 174 pounds. Thus, commercial production is expected to total about 3,300 million pounds in third-quarter 1987, up 2 percent from 1986.

The very high producer net returns since mid-1986 and the outlook for relatively high net returns continuing through most of 1987 should encourage producers to begin expanding output over the next several quarters. The March-May 1987 pig crop is expected to increase about 5 percent from 1986. In turn, the fourth-quarter 1987 slaughter is projected to be 4 to 6 percent higher than expected in fourth-quarter 1986. With the average dressed weight expected to be about the same in 1987 as in 1986, commercial pork production would be about 3,775 million pounds, up 5 percent from the 1986 levels.

Hog Prices To Continue High

Barrow and gilt prices at the 7 major markets averaged \$61 per cwt in the third quarter. This is the highest price since 1982 and well above the \$44 of a year ago. The high prices were due to a sharp drop in pork production, low pork stocks, and only a slight increase in beef supplies. In addition, government purchases of red meats for export and domestic feeding programs required by the Food Security Act of 1985 contributed to higher prices. A modest increase in per capita income also helped.

Lower year-over-year pork and nonfed beef production will help strengthen hog prices in fourth quarter 1986 and first-half 1987. Nonfed beef competes with pork in the processed meat market. Low stocks of pork in cold storage will also help strengthen prices. On the other hand, large and increasing poultry production will continue to pressure hog prices and consumers' income is expected to continue lackluster growth. For these reasons, hog prices are expected to average in the low- to mid-\$50's in the fourth quarter and the mid-to-high \$50's per cwt in the first and second quarters of 1987.

In second-half 1987, hog prices are expected to fall below 1986 levels as pork production increases slightly on a year-over-year basis. Nonfed beef production is expected to continue to be below year-earlier levels. Poultry production increases will continue to pressure hog prices. Cold storage stocks of pork are expected to continue to be relatively low, supporting hog prices. Hog prices are expected to average in the mid- to high \$50's in third-quarter 1987. In the fourth quarter, prices are expected to drop into the high-\$40's to low-\$50's as the projected 5 percent larger March-May pig crop goes to market.

Pork Imports To Increase Slightly in 1987

Pork imports totaled 807 million pounds, carcass weight, during January-September, down 7 percent from a year ago. Imports from Canada, the largest exporter to U.S. rose 51 million pounds, 16 percent over a year ago. Imports from Denmark, the second largest exporter to the U.S. declined 84 million pounds, down 25 percent from a year ago. The Canadian dollar has been slightly weaker against the U.S. dollar this year compared to last year. As the Canadian dollar weakens, U.S. pork prices are higher in Canadian dollars. Meanwhile, the Danish krone strengthened and the European Community reduced its export subsidies during the first half of 1986. However, the European Community recently reversed its policy and increased its export subsidies. For all of 1986, imports of pork products are expected to total about 1,080 million pounds, down 4 percent from 1985. Imports of pork products are expected to rise about 2 percent in 1987 as the U.S. market remains relatively favorable for the major exporters. Increased European Community subsidies are expected to raise Danish exports and Canada is expected to continue relatively high exports to the United States.

The number of live hogs imported from Canada during January-September totaled 418,137 head, down 61 percent from a year ago. Countervailing duties of Can\$4.386 have slowed Canadian exports of live hogs to the United States for all of 1986. Live hogs imported from Canada may total about 500,000 head,

less than one half of the number imported in 1985. In 1987, the number of hogs imported from Canada is expected to decline further.

U.S. pork exports totaled 58 million pounds during January-September, down 40 percent from a year ago. The decline is largely due to reduced shipments to Mexico. Continuing financial difficulties of Mexico are responsible for the greatly reduced marketings. Exports for the year may total 90 million pounds, down 30 percent from 1985. Exports in 1987 may increase from 1986 especially if the Japanese yen remains strong against the dollar.

Pork Prices Rise Sharply in Second-Half 1986, Will Continue High in 1987

Retail pork prices in third-quarter 1986 averaged \$1.89 a pound, up 17 percent from a year ago and up 15 percent from the second quarter. Prices are expected to average nearly the same as in the fourth quarter. Lower hog slaughter and fewer hams in cold storage will contribute to higher retail prices. However, larger supplies of turkeys may temper these price increases. In addition, retail prices in September averaged \$1.94 a pound, the highest monthly average since records were established. For all of 1986, retail prices may average about 9 to 11 percent in than in 1985. In 1987, retail prices are expected to average about 3 to 5 percent higher as red meat supplies decline further.

Farm-to-retail spreads averaged 99 cents a pound in September, up 3 cents from a year ago. For all of 1986, the spread may average about 94 cents a pound, up 3 cents from 1985. The farm-to-retail spread has ranged from a dollar to 77 cents per pound in 1986. The farm-to-retail price spread is expected to average 3 to 5 percent higher in 1987 than in 1986.

Frozen Pork Stocks Lowest since 1982

Frozen pork totaled 186 million pounds on September 30, 1986, down 33 percent from a year ago and the lowest for this date since 1982. The low pork stock are due to relatively high pork prices and anticipated increases in pork production, which would lower pork prices. For the same reasons, pork movements into stocks during 1987 are expected to be modest, compared to stock movements in recent years.

Sheep and Lambs

Although lamb prices have reached record levels in 1986, prices have been quite volatile. With relatively high lamb prices and low feed costs, sheep producers' net returns are higher. High returns usually cause producers to expand their flocks. During January-September, mature sheep slaughter as a percentage of total slaughter was 5.8 percent, compared with 6.9 percent a year ago. In recent years, when mature sheep slaughter fell below 7 percent the stock sheep inventory began to stabilize or possibly expand. Total commercial lamb and sheep slaughter in January-September fell 8 percent from a year ago. The January 1, 1986 inventory of all sheep and lambs was down 5 percent.

Based on the number of ewes 1 year and older on January 1 and a lambing rate near 1985's 102 lambs per 100 ewes, 1 year and older, the lamb crop would be about 6.9 million head. Total commercial slaughter is projected at about 5.7 million head. If live animal exports remain low and death rate is about the same as in 1985, the inventory of all sheep and lambs may decline 2 to 4 percent.

For all of 1986, production is expected to total 329 million pounds, down 7 percent from a year ago. Production in 1987 is projected at 320 million pounds, down 3 percent from 1986.

Lamb prices at San Angelo averaged \$69 per cwt this summer, compared with \$71 last summer and \$77 this spring. Prices are normally the highest in the spring then decline in the summer and fall. In the fourth quarter, lamb prices are expected to average \$60 to \$63 per cwt. For all of 1986, prices may average \$68-\$69 per cwt, about the same as last year. In 1987, lamb prices are expected to average \$66 to \$72 per cwt, depending upon the level of lamb imports and heavy weight lamb discounting.

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OUTLOOK FOR POULTRY AND EGGS

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Poultry and egg production is expected to increase in 1987. Large grain supplies are expected to keep feed costs near 1986 levels. Competing meat supplies are expected to decline and the demand for meat and poultry products to grow modestly in step with the general economy.

Factors Affecting the Poultry Industries

Feed Costs

Last spring farmers reduced the number of acres planted to corn and soybeans in order to participate in farm programs. As a result, the number of acres harvested for corn is expected to fall 8 percent from last year and soybean acreage harvested may decline 3 percent. In spite of a reduction in harvested acreage, we have larger ending stocks of both corn and soybeans. These larger ending stocks will result in increased supplies for this fall and in 1987. The loan rate for corn has been reduced from last year, which effectively lowers the market price given current supply-demand conditions. Since producers are receiving generic certificates in lieu of target price payments, "free stocks" of corn will be larger than last year. Free stocks are those not pledged for loan collection or owned by Commodity Credit Corporation (CCC). Larger free stocks suggest market prices will likely fall below the loan level. The farm price of corn averaged \$2.35 per bushel in 1985/86, but may average \$1.35 to \$1.65 in 1986/87, below \$1.92 loan rate. Prices for 44 percent protein soybean meal at Decatur in 1986/87 may average \$140 to \$160 per ton, near \$154.90 in 1985/86. The demand for meal is expected to determine the crush of soybeans in 1986/87 because soybean oil prices are likely to average below last year.

The Economy

The Gross National Product (GNP) in 1986 has grown at a sluggish rate. During the first half of 1986, GNP grew at a yearly rate of about 2 percent and has stayed nearly the same in the second half. During 1987, the growth rate of GNP may increase slightly from that in 1986.

The continued sluggish growth in GNP suggest consumer demand for meats will be little changed in 1987 from 1986. Increased demand has shown up as additional purchases of carryout food from restaurants and convenience food

from grocery stores during the past year. The poultry industry has developed several further processed products well adapted for the convenience market both restaurants and grocery stores to take advantage of these new trends in consumption.

Supplies of Competing Meats

Supplies of red meats in 1986 are expected to decrease from 1985 levels. In 1987, red meat supplies could fall again. The main source of the decline in red meat production in 1986 was pork, down 5 percent from 1985. Because hog produces were faced with low prices and fairly strong corn prices in first half 1985, they did not expand production for 1986. However, the high hog prices and lower corn prices in second-half 1986 are expected to initiate an expansion in early 1987 but the additional supplies will not be available for consumption until late 1987 or early 1988. Pork production could be reduced in early 1987 as producers increase the size of their breeding herds and sell fewer hogs for slaughter.

In 1987, beef production is expected to decline, after increasing slightly in 1986. The Dairy Termination Program (DTP) which encouraged the sale of dairy cows helped keep beef supplies above 1985 levels. In 1987, cow and non-feed steer and heifer slaughter will likely decline. The cow herd is expected to stabilize over the next couple of years as more heifers are retained to utilize forage on traditional cow-calf operations. Supplies of fed beef are expected to remain large through 1987.

Lower supplies of both beef and pork indicate that their prices will increase in 1987. In addition, hamburger prices may rise more than all beef because of smaller supplies of beef from cows and nonfed steers and heifers. Thus, fast food restaurants faced with higher cost hamburger and lower priced poultry may have an additional incentive to advertise their poultry entrees.

Broilers

With feed costs expected to remain low and maintain positive net returns, broiler producers are expected to increase output 6 percent in 1987. Continued favorable consumer demand for processed chicken products and parts along with smaller supplies of competing meats will result in prices below 1986 levels. These prices are likely to be higher than might be expected given the increase in production, because of the higher prices for competing meats.

Production to Increase

Output of broiler meat through federally inspected plants during the first 9 months of 1986 was 4.5 percent above a year earlier. The number of broilers slaughtered increased 3.9 percent, while average marketing weights increased 1.2 percent. With continued growth in further processing and relatively high prices for breast meat, producers have an incentive to raise larger birds. In fact, some producers are maintaining special hatchery flocks to produce processing birds.

Continued strong demand for broilers and processed chicken items, especially by restaurant chains encouraged expanded production of broilers in 1986 and suggests further expansion in 1987. There were some reports in 1985 that grow-out housing for broilers was limiting production, especially because of reduced farm lending. However, creative financing of poultry housing has reduced these concerns. Still, some time is needed to build additional facilities especially where a complete complex is needed--grow-out houses, feed mills, hatchery, and possibly slaughter plus processing plants.

One indicator of producers' expansion plans is the number of pullet chicks entering the hatchery supply flocks. Since these pullets will not contribute to the hatching egg supply for 7 months, changes in the pullet numbers provide an early indicator of expected future hatching egg needs. Normally these hens stay in the laying flocks until they are about 14 months of age, so a 7 to 14 month earlier summation can be used to represent the size of the laying flock. In early 1987, the cumulative pullet placements will be 5 to 9 percent above 1986.

Many producers may have also kept their hens a little longer to produce extra hatching eggs in 1986. They may be adding extra pullets for 1987 to add some surplus capacity in their hatchery supply flocks. Therefore, these operators could increase production if profit expectation warranted. In 1987, pullet chick production is expected to increase to 5 to 7 percent, after an increase of about 4 percent in 1986. While the hatchery supply flock could support a larger increase in production, such an increase is not expected because of facilities constraints.

Price to Slip in 1987

Broiler prices in 1986 have benefited from several factors, including increased demand from restaurant chains, especially those adding additional chicken items to their menus. In July and August 1986, hot weather in the Southeast caused some broiler losses and birds to grow slower. These supply-reducing factors, coupled with increased restaurant demand, boosted broiler prices in the third quarter. The 12-city composite of whole birds, both branded or graded, and whole birds without giblets averaged 67 cents per pound, up from 51 cents in third-quarter 1985. For all of 1986, wholesale prices are expected to average 56 to 57 cents per pound, 5 to 6 cents above 1985.

Prices for broilers in the 12 cities during 1987 are expected to average 50 to 56 cents per pound, down slightly from 1986. While prices are expected to fall slightly because of larger broiler supplies, prices have not fallen more because of high red meat prices. Finally, demand for broilers from the restaurant industry is expected to remain strong in 1987, and help to stabilize prices.

World Production Gaining

World production of broilers continued to increase in 1986, up 4 percent, and a gain of 5 percent is forecast for next year. Lower feed prices, increased substitution for red meat, and world wide expansion in processed poultry products for use in fast food industries have all increased world

demand. Increased output in many major importers has reduced demand for poultry meat imports in 1986, particularly in the Mideast and the USSR.

Major broiler exporters are France, Brazil, the United States, and Hungary. Production fell in the major foreign exporters in 1983 and 1984 as they adjusted output to reduced world import demand. With increasing internal consumption, output in these countries has now returned to earlier levels. Because of red meat supply problems in Brazil, more broilers are being consumed there domestically and exports could be reduced. Thailand is becoming an increasingly important supplier of broilers, especially to the Japanese market, and Thai output is continuing to expand. The United States' major markets for broilers are Japan, Hong Kong, Singapore, and the Caribbean. U.S. exports are likely to rise 25 percent in 1986 and are forecast to remain at this level next year. The major factors boosting exports has been the devaluation of the yen and the Export Enhancement Program (EEP). Almost all of the sales under the EEP have been made to Egypt.

Exports to Japan have increased 86 percent during January through September 1986 over last year. The devaluation of the dollar against the yen has increased demand for imports, reduced demand for domestically produced chickens, and lowered prices. Singapore's pollution problems necessitated the closure of smaller mixed poultry and pig farms. However, the drop in domestically produced birds has been filled mainly by importing live chickens from Malaysia. Hong Kong's pollution problems are also holding down poultry output. Imports from China are increasing to fill the demand, in particular from the expanding fast food market.

Turkey

Turkey production increased in 1986 and is expected to further increase in 1987. Prices in 1986 will likely be slightly below last year, and increased production may cause prices to slip in 1987.

Production

The preliminary estimate of turkey meat produced in federally inspected plants during January through September 1986 increased 12 percent from 1985. The number of birds was up 13 percent and the average liveweight was down 7 hundredths of a pound to 19.89 pounds. Based on poults placed that could be slaughtered in the fourth quarter, output may be up 13 percent from last year. For all of 1986, output is expected to be 12 percent larger than last year.

With returns well above costs in second and third quarters of 1986, producers have evidently decided to sharply boost production in 1987. Production is likely to be further encouraged in 1987 because grain prices in 1987 are expected to slip from 1986 levels, further reducing costs. Output of turkey meat in 1987 may increase 16 percent.

Stocks of frozen turkey on November 1, 1986 were up 12 percent from last year. In the last 2 years, retailers have had tight supplies of turkey for Christmas sales after unexpectedly strong sales at Thanksgiving. In 1986, retailers built stocks of frozen turkey early in the year. By November 1,

stocks of whole turkey were up 12 percent from last year. Stocks at the end of the year may rise from last year.

Prices to Slip in 1987

In first-half 1986, prices of 8- to 16-pound commodity-packed hen turkeys averaged 65 cents per pound, down slightly from 67 cents in 1985. Increased purchases by retailers pushed prices up about 2 cents in the third quarter from 1985's 78 cents per pound. With large supplies of turkey in cold storage and slaughter expected to increase, prices in the fourth quarter may average 79 to 82 cents per pound, down from 90 cents last year. In the fourth quarter of this year, tighter ham supplies at higher prices than a year ago are expected to strengthen demand for the larger supplies of turkey.

If output increases as expected and stocks of frozen turkey are up at the start of 1987, prices of turkey may be slightly lower than this year. Prices of young hens in first-half 1987 may average 59 to 65 cents per pound, down from 65 cents in 1986. In the second-half, prices may average 70 to 75 cents per pound, down from 70 to 81 cents expected in 1986.

World Turkey Production Increases

Output of turkey by major producing countries in 1986 is expected to rise 9 percent from last year and may increase 10 percent in 1987. The U.S. accounts for about 55 percent of the world's production. France is the second largest turkey producer, with output about 10 percent of world production.

The U.S.'s major markets are Egypt, West Germany, Canada, Mexico, Japan and Hong Kong. U.S. turkey exports rose 3 percent in 1986 because of increased exports to Egypt. Exports to West Germany fell last year as the continued high value of the dollar and growing consumer preference for fresh/chilled product made U.S. frozen turkey less competitive.

U.S. exports of turkey are expected to be down 7 percent in 1986 because of lower shipments to Mexico and Egypt. Exports in 1987 are likely to remain near this years level.

Eggs

Egg production may increase very slightly in 1987, after being unchanged in 1986. With supplies up in 1987, prices for eggs may be slightly lower than in 1986.

Production to Increase

Egg production in the first three quarters of 1986 was 7.7 million dozen above 1985's 4,246 million dozen. After reducing orders for replacement pullets to enter the flocks in 1985, a larger number of replacements were added in 1986. However, producers faced with low net returns, especially April through June 1986, sold older hens and held production near last year's level.

Egg production in fourth-quarter 1986 may increase about 1 percent from last year. With prices following throughout the year for feed grains, feed costs have declined and net returns have increased. Thus, producers may slow sales of old hens to expand production.

In 1987, egg producers are expected to slow sales of older hens and increase output slightly. Feed grain prices are expected to remain low and thus cost of producing eggs should remain near present levels, helping to encourage additional production. During 1987, egg production may rise 1 percent.

Egg Prices to Slip

Prices for cartoned Grade A large eggs in New York were above 1985 levels through the first three quarters of 1986. However, egg prices fall in first-half 1985 as egg producers upped production 2 percent in the first quarter and held production about equal in the second quarter. In 1986, prices slipped into the mid 60's as production increased nearly 1 percent in the second quarter. Production increases slowed and prices rose in the third quarter as more old hens were sold and hot weather in the Southeast reduced the rate of lay.

Demand for processed eggs in 1986 has been strong and prices for egg whites have been above 1985 levels. Much of the increase in demand has resulted from an improved export market for egg products because of the weaker dollar relative to the Japanese yen. The demand for processing eggs has helped stabilize prices for shell eggs thus far in 1986.

During fourth-quarter 1986, export demand is expected to be above last year as more eggs are needed for holiday baking, helping to firm prices. With production expected to be above last year, prices for cartoned Grade A large eggs may average 72 to 75 cents per dozen, down from 76 cents last year. In 1987, prices may average 65 to 71 cents per dozen, down from 70 to 71 cents this year.

World Egg Production Continues Increasing

World egg production is expected to increase 1 percent in both 1986 and 1987. The USSR, followed by the United States, together accounted for 40 percent of the major producers' output in 1986. Other major exporters include West Germany, Yugoslavia, Belgium-Luxembourg, the United States and Turkey.

The United States exports eggs and egg products mainly to Japan, other major markets are Canada and Hong Kong. U.S. egg exports in 1986 are expected to increase almost 45 percent as the devaluation of the dollar against the yen led to a stronger demand for U.S. egg products in Japan. Next year, output is forecast to increase in Japan and imports are expected to remain stable. Total U.S. exports in 1987 are likely to be close to 1986.

Retail Prices

Retail prices for poultry and eggs may be slightly below a year earlier in both fourth quarter 1986 and in 1987. The retail poultry price index is a

combination of broiler and turkey prices. Retail turkey prices may average near last year as prices are above last year for Thanksgiving but may decline for Christmas. Prices for broilers may slip below last year as production increases. With additional production of broilers and turkeys in 1987, the retail price index for poultry may be below a year earlier.

The retail price index for eggs in fourth quarter 1986 may be down slightly from last year because of larger supplies. In 1987, the index would also be below 1986 as producers increase the available supplies.

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ALTERNATIVE PERSPECTIVE ON THE MEAT OUTLOOK

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The most significant development in the livestock industry since the late 1970's in my opinion, has been the acceptance of poultry as a satisfactory substitute for red meat by a large number of consumers.

Between 1977 and 1982, the retail price for beef and pork advanced 63% and 40% respectively, while the retail price for broilers increased by only 19% (See Chart). The widening spread between relative prices for red meat and poultry through that period generated an accelerated swing in consumer purchases to the white meat. Many industry observers now believe that a substantial increase in poultry consumption has led to a permanent preference change to white meat among a large number of consumers. One thing is clear, since 1979 deep declines in "real" prices for red meats at retail have been required to move essentially the same quantities of product on a per capita basis through the pipeline (See Charts). For choice beef the decline in the real price is estimated at over 32%. For pork, despite a comeback this year, it has been more than an estimated 18%.

Along with changing lifestyles has come changing attitudes toward health and nutrition. These changes have joined relative meat prices in reshaping meat purchasing decisions.

While aggressively developing convenience products, the poultry industry has also fully capitalized on recommendations made by various health organizations that include more skinned poultry meat in diets due to its lower saturated fat content.

The red meat industry is now fighting back. Two programs that are now running concurrently, which are the Nutri-Facts program, extolling the nutritional values of meat, and the closer trimming of fat from retail cuts, could begin to stabilize red meat demand. The development of new value-added products, of which

some are pre-cooked and ready to heat and serve, and new packaging designed to raise the appeal of beef and pork among consumers may eventually lead to the recapturing of some lost market share. A demand comeback by the red meats, however, is likely to be a long and difficult process.

If the weakening trend of demand can be arrested in 1987 that would be a major victory for the industry.

The market oriented new tax law carries with it a short-term bearish outlook for the livestock markets. In order to achieve lower tax rates, the bill eliminated several deductions that farmers and feeders depended upon in the past. Incentives to "tax feed" cattle were seriously impaired, which will weaken the financial condition of the industry. Disinvestment of outside capital in livestock ventures could perpetuate the liquidation of the cattle herd through the first quarter of next year. It could also slow the rebuilding process of the hog herd despite economic incentives to expand.

Cheap, abundant feed supplies, keeping the cost of production low may enable many livestock producers to survive the adjustment period next year. Beyond that, the fate of farmers and ranchers partly depends upon the government's ability to resist the temptation to generate increased revenues by raising the tax rate.

While the cattle industry will be in the process of moving away from tax motivated production levels, it may be moving one step closer to integration. Feedlot managers and the packers they serve may be getting closer to the point where they will begin to feel threatened by the continued declines in the nation's calf crop. Next year, the calf crop is likely to show the seventh consecutive decline. It is likely to total about 39 million head, lowest since 1959. Several large packers have already grown accustomed to the forward cash contracting of finished cattle from feedlots to gain some measure of inventory control. Extending this practise to insure a steady supply of young animals to be placed on feedlots would seem to be the next logical step in the intergration process.

From a production standpoint, even with some further herd liquidation in 1987, beef supplies are likely to fall short of this year (See Table). Only a modest decline of beef output (1 or 2%) can be expected in the first quarter followed by a fairly deep cut during the second quarter (5 to 7%). During the second half of the year, a 3 to 4% decline in beef tonnage is likely. With beef demand having become relatively inelastic the cutback in supplies could trigger some rather sharp but temporary price increases during the second quarter. For choice steers, Omaha basis, the mid to high 50.00's/Cwt. is about the most that can be hoped for through the first quarter unless winter weather becomes severe, limiting weight gains. Prices in the low to mid 60.00's

are possible during the second quarter, however, before the market backs off again through the second half of the year.

The pork industry has been less dependent upon outside capital than the cattle industry and therefore should feel less impact from disinvestment under the new tax law. However, larger producers will still be hurt by certain provisions of the new tax code. With confinement facilities operated at or near full capacity, for large producers to expand, the construction of new facilities would likely be required. That means the borrowing of large capital. The loss of tax incentives may give some producers second thoughts about expanding unless the present period of favorable economic returns is stretched out over a longer period of time than has been demonstrated over the last many years. Compounding their decision making process is the current uncertainty over upcoming hog supplies.

The uncertainty is a reflection of mixed signals emanating from the September Hogs and Pigs report. Hogs in weight groupings of 60 pounds and over were down less than 3% from a year earlier as of September 1. The bulk of those hogs were born by June 1, the date of the previous quarterly report. Yet the June report listed a 9% decline from a year earlier in baby pigs weighing less than 60 pounds. The inconsistency in market hog numbers from one report to the next makes the entire report suspect. I would like to believe that breeding stock numbers were down 10% from a year earlier as of September 1st. However, I remain cautious in my outlook pending the outcome of the December report.

It is most unfortunate that some of the nation's pork packers find it too costly and unnecessary as part of their operation to break down slaughter into barrow and gilt components. Industry wide data of this nature would be quite helpful in determining producer efforts to adjust inventories of breeding stock. Also unfortunate is the budgetary constraints on the USDA, preventing them from producing a monthly report on hog inventories which would help determine whether or not producers were current or falling behind on marketings. It appears that the hog industry which has been hungry for supply information through the years will remain so for awhile longer.

From a production standpoint it would appear that pork output will be down relative to this year through the first half of 1987. Industry wide there should be some response to highly favorable feeding ratios, however, increasing output by the second half of next year. The increased retention of gilts will likely lead to slaughter decreases persistently greater than market hog indications from either the September or coming December report. Some of the slaughter declines, however, will be made up by the feeding of hogs to heavier average weights. Relative to this year I expect pork tonnages to be down 5 to 6% in the first quarter and off only 2 to 3% in the second quarter (with September/November

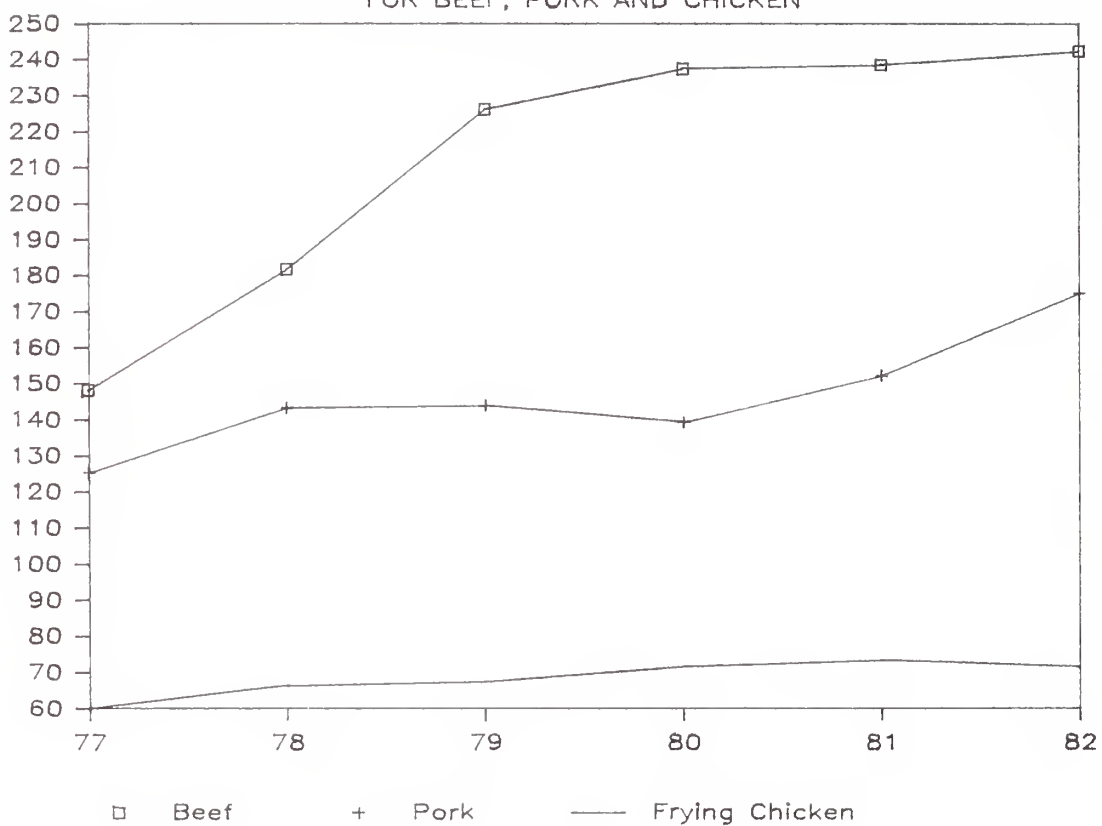
farrowings likely exceeding September 1st intentions). December '86/February '87 farrowings could actually exceed a year earlier by a small margin leading to a 1 to 2% production increase during next year's third quarter. Fourth quarter production could be up by 2 to 3%. Again production increases could be held somewhat in check by financial constraints on many producers still carrying large debt, and the loss of tax incentives.

From a price standpoint, seven market barrow and gilt prices will likely fluctuate in the high 40.00's to low 50.00's through the first quarter, drop to the mid to high 40.00's during the second quarter, and then rebound to the low to mid 50.00's in the third quarter. A break to the mid to high 40.00's is possible again during next year's final quarter.

The 1987 outlook for the red meats is laced with both positive and negative influences. Beef output for the year is likely to be down with pork likely showing little change on balance. Poultry production should be expanding again, however, keeping total meat supplies quite large. The red meat industry is taking some steps to shore up demand, but subdued growth in the general economy and a possible nearterm negative reaction to the new tax code could be stunting somewhat. While the outlook on cattle in particular, appears favorable for this spring we have been down this road before. Guarded optimism still appears warranted.

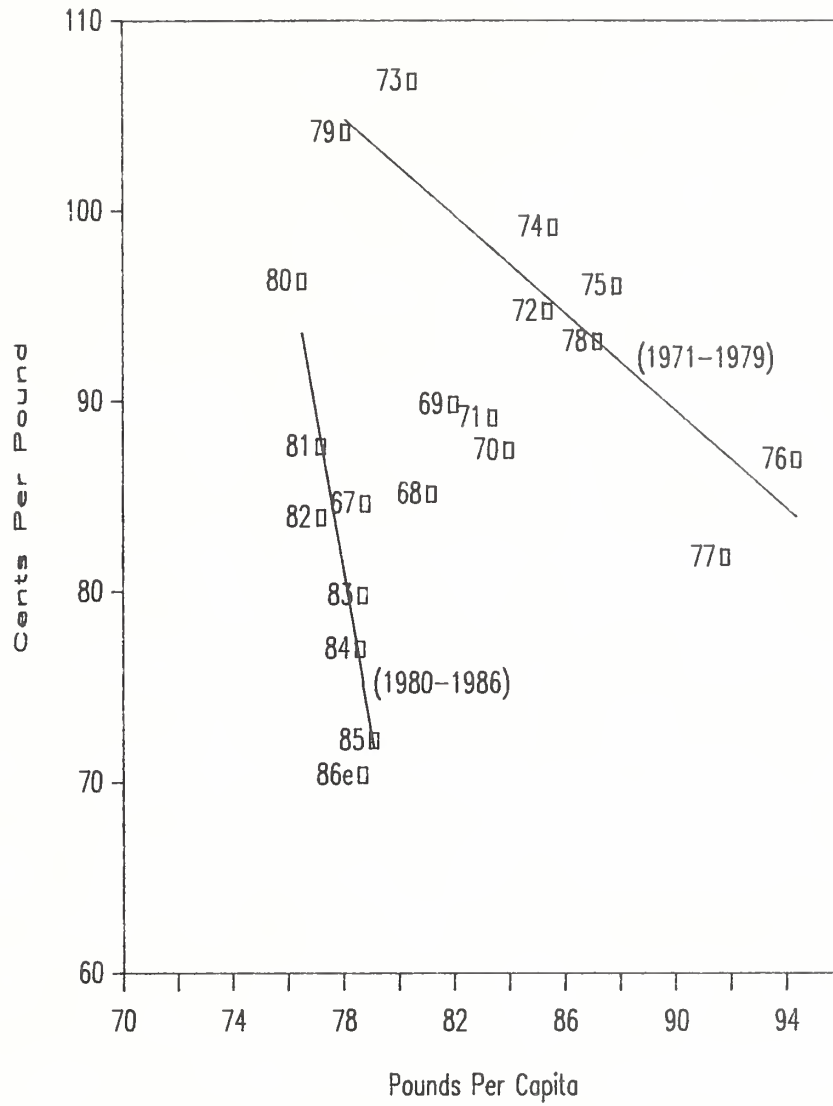
RELATIVE RETAIL MEAT PRICES

FOR BEEF, PORK AND CHICKEN



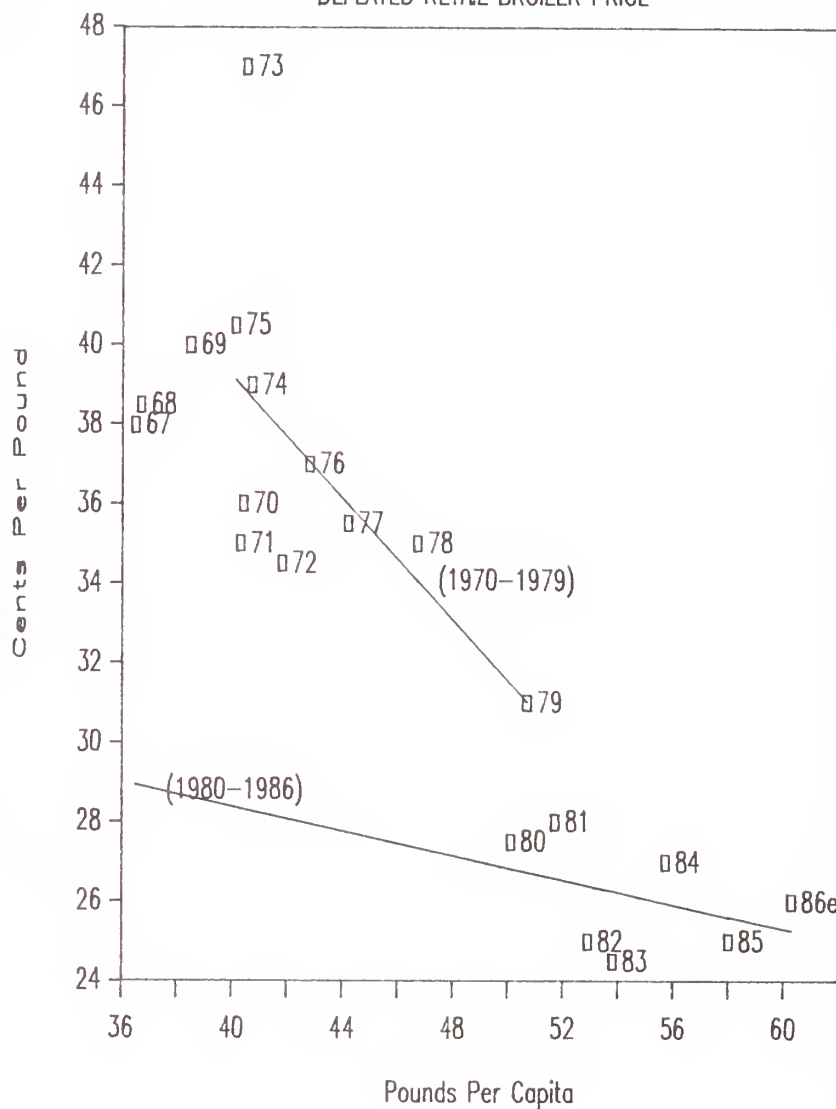
PER CAPITA BEEF CONSUMPTION AND

DEFLATED RETAIL BEEF PRICE



PER CAPITA CHICKEN CONSUMPTION AND

DEFLATED RETAIL BROILER PRICE



1987 QUARTERLY COMMERCIAL MEAT PRODUCTION AND PRICE ESTIMATES

Quarter	Beef (Mil. Lbs.)		Choice Steers		Pork (Mil. Lbs.)		Barrows And Gilts	
	Amount	% Change To 1986	900/1100 Lbs. (Omaha)	\$/Cwt.	Amount	% Change To 1986	7 Markets	\$/Cwt.
I	5,680	98-99	56.00-60.00		3,370	94-95	48.00-52.00	
II	5,870	93-95	60.00-64.00		3,475	97-98	46.00-50.00	
III	6,055	96-97	58.00-62.00		3,285	101-102	50.00-54.00	
IV	5,450	96-97	58.00-62.00		3,600	102-103	46.00-50.00	
Total	23,055	96			13,730	99		

ANNUAL AGRICULTURAL OUTLOOK CONFERENCE

United States Department of Agriculture
Washington, D.C.



Outlook '87, Session #11 For Release: Wednesday, December 3, 1986

MEAT MARKETING ISSUES

C. Manly Molpus
President, American Meat Institute

The meat industry today, has a new game plan. We've shifted from a sluggish defense to an aggressive offense. Whatever pessimism we might have felt in the past has given way to a determined optimism to win back the market share.

The last decade has witnessed a consumer revolution. Unfortunately, we were slow getting our antennas up to sense the changes and to spot new lifestyles. It took time, lost market share and a heavy load of information to convince us that we must discard old habits and retool our thinking if we expected to remain competitive in today's food market.

To the industry's credit, it adjusted its emphasis. This doesn't mean packers and processors are any less concerned about efficiency and productivity. It does mean we've expanded our horizons. We're trying to do a better job of matching our products to consumer needs, whether this means adapting present products or creating new ones...then, effectively calling attention to these products in the marketplace by improved and expanded marketing efforts.

The results have been dramatic. We have embarked on a new era. United, as never before, everyone -- from producer to packer to the retailer -- is rethinking past practices and revamping merchandising efforts. "Marketing," "merchandising" and "promotion" have become the "buzz words" of the 80s.

We've developed new strategies and new products. Yet from the consumers' vantage point, the best is yet to come. We've barely cracked the door. More positive changes will take place in the next three to five years than in the past 20.

1987 will be a "water shed" year for the meat industry. The ideas, information and innovations of the recent past will be coming together in the market place. New products, improved packaging and increased promotion resources will all converge on the market place in 1987. Many of our new approaches will be tested in '87. We believe the results will show that we

are doing the right things.

USA TODAY summed it up very well. "The industry," it said, "is fighting back, offering more consumer information, promoting beef as healthy and nutritious and cutting away the fat."

Coupled with our new attitude is the increased firepower we'll have at our disposal. The beef and pork checkoff programs are now underway. Together they'll generate about \$80 million annually for research and promotion programs.

The beef industry, for example, has earmarked \$21 million for advertising and promotion for February through September. The message will be: "Beef. Real food for real people." Noted personalities Cybil Sheperd and James Garner will be helping tell this positive story.

We have developed a better understanding of consumers in recent years through consumer attitude research and other research such as the National Consumer Retail Beef Study. Consumers have candidly told us they want products that enable quick, easy, convenient meal preparation; that promote leanness; that are accompanied by understandable nutritional information, and that carry brand identification.

The need to provide convenient products comes as no surprise. Homemakers are trading in their kitchen stoves for office desks in steadily growing numbers. Fifty-four percent of married women with pre-school children work, up from 42 percent from 1980. Fully 49 percent of married women with children under two worked or were looking for work in 1985, up 10 percentage points in just five years. The typical American family -- the husband coming home from work to be greeted by the homemaker wife and kids -- has declined from 60 percent in the 1950s to less than 20 percent today. This trend will continue.

Thirty-six percent of the homemakers surveyed last year told Yankelovich they rarely have more than 30 minutes to fix meals. No wonder 44 percent of U.S. households have microwave ovens. But meat hasn't kept pace. Only 7 percent of all meat dishes are prepared in microwaves.

The industry has responded with precooked meats. Working people can now buy a chuck roast without worrying about the time it takes to cook it. One major retail chain carries 26 different precooked products from eight packers. Working homemakers now have the luxury of serving hearty, balanced meals that include meat in a matter of minutes. That's convenience.

It's also progress. Think back a few years. How many of you thought then that the day would come that you could dash into the store on your way home from work, buy a steak that was already cooked, pop it into a micro-

wave and be enjoying it by the time the vegetables had finished heating?

While convenience promotes sales, the negative fallout from the diet-health issue has retarded them. The biggest roadblock has been fat which has been linked to heart disease and cancer. Unfortunately, many people mistakenly equate fat with red meat.

Although beef and pork have been on a diet for the last 20 years and are 10 percent leaner, the fat image has persisted. So the industry is making the fat disappear. Next time you shop, notice red meat's new leanness...less external fat, and increasingly, stores are offering a "lean" type of beef in addition to the "Choice" grade.

Motivated by last year's National Retail Beef Study that found consumers perceive closely or completely trimmed cuts of beef "as being less wasteful and more healthful," retailers were the first to sharpen their butcher knives.

In late January, the number two chain in the country launched its trim program in conjunction with AMI's National Meat Week Campaign. Outside fat went from the standard one-half inch to a lean quarter-inch or less. This one company is trimming some 13 million pounds of fat a year. Shortly thereafter, the number one chain adopted a similar program.

Packers then moved to reduce their trim standards. They're cutting the fat back from the standard one-inch of fat to a norm of one-half inch. In an ad aimed at retailers, one major packer said the trimmed product gives a more salable meat that's designed to meet the tastes of today's consumer.

Consumers like the new lean red meat. Supermarkets that have switched to trim programs report increased red meat sales. One retail executive credited the trim program, coupled with increased customer services in the meat department, with boosting beef tonnage 6.3 percent after only a few months.

At AMI, we're convinced the industry is on the right road. In July, we announced a seven-point lean beef program that encourages packers and retailers everywhere to market trimmed products.

Let me assure you, however, we are not at this point advocating a grading standards change. We support Public Voice's petition to enhance merchandising opportunities for leaner good grade by changing its name. Our goal is assuring that segment of the public, with diet-health concerns, that the meat case offers them the alternative of leaner products.

Expanding consumer choices is evident everywhere you look. In many meat departments, consumers can choose from a lean house brand, "Choice"

and even "Prime" grades. Other stores are marketing specialty beef, such as Natural beef, Natural Light and exotic brands such as Chianina that are naturally less fat. This brings up another point. Trimming fat is expensive. One of the top challenges is to develop animals that produce less external fat without sacrificing palatability.

The processed meats section offers a rapidly growing range of products with reduced fat, sodium and calories. The "fat free" lean hams now have approximately a ____% share of our ham market. The pork sausage industry is experiencing mild growth by adding value and leanness, brown and serve sausage and sausage and biscuits.

Retailers across the country are giving their meat department's, which account for about 18 percent of their sales, more attention.

In addition to stocking lean, better-trimmed meats, many retailers offer meat recipes, nutrition information, store coupons and meat cutting assistance to attract consumers and boost meat sales. Specialty cases include gourmet items and such time-savers as stuffed pork chops.

Going hand-in-hand with customer services are "Meat Features." The industry has produced four videos on specific cuts: ground beef, top sirloin steak, butterfly pork chop and top round steak. When test marketed, they successfully stimulated sales of these products.

Another industry program, Meat Nutri-Facts, is positively influencing consumer attitudes about red meat's nutritional qualities. Working together, the American Meat Institute, the Food Marketing Institute and the National Live Stock and Meat Board developed this program that provides a nutritional profile at the meat case for 31 cuts of beef, pork and lamb.

Many consumers have been surprised to learn that the calories, fat and cholesterol in red meat are less than they had been led to believe. The easy-to-read bar graphs also show the sodium, protein, minerals and vitamins of the various cuts.

Retailers have overwhelmingly accepted this marketing concept. In just 19 months, the program has been installed in 200,000 stores in every section of the country. The program has added a new dimension to meat marketing. National Cattlemen's Association President Don Butler said, "It's proving to be a really positive force for the beef industry."

The health community likes it too. The American Dietetic Association awarded Nutri-Facts its prestigious "Presidents' Circle Nutrition Education Award." The group commended the program as "an outstanding contribution to nutrition education." That's the kind of endorsement we enjoy getting. There is no doubt this program has dispelled many of the myths surrounding

red meat and has helped educate consumers to the nutritional benefits meat adds to a balanced diet.

Just as fat is disappearing from meat products, the evolving meat case of the 80's also has fewer bones. Boneless beef and pork products that offer more convenience and no plate waste are gaining consumer popularity.

Coming soon is the most dramatic change in the marketing of fresh meat. Branded retail-ready fresh meat products from the packer is on the way.

Packers who initiate trim programs and deliver their products in retail-ready packages want consumers to identify with these products. This can only be done through brand identification, which builds brand loyalty.

The National Consumer Retail Beef Study clearly demonstrated the importance of marketing (and branding) if the industry expects to realize the full potential for new beef products. There's also a move toward breed-branded beef such as Certified Angus Beef or the new Key-light beef. We only have to look at the success of the poultry industry to see why branding is the next logical step.

One major retailer told us, he wants both closer trimmed and branded products -- the sooner the better. "Packers," he said, "must put their names on products if we are going to get beef and pork off the ground."

Several packers are test marketing branded beef and pork products now. For an idea of the magnitude of the change, one packer who will slaughter some 2 million head this year estimated it would cost almost \$50 million to install vacuum-packing machinery and other equipment needed to cut beef into consumer-sized portions and would require 40 percent more employees. But in spite of the enormous costs involved, branded products will be the wave of the future.

At AMI, we formed the Center for Meat Marketing Research to generate market information that we can share with both our industry and retailers. So far we've looked at precooked meats, examined consumer understanding of beef grades and their attitudes toward pork and trichina.

On the drawing board are studies to determine consumers attitudes regarding Choice versus lean beef; and how meat can be merchandised better to appeal to the various population segments as detailed in the Yankelovich studies.

Last year, Yankelovich found that 50 percent of the population falls into the "active lifestyle" or "health-oriented" consumer segments -- the groups that consume the least meat. Most alarming to us, this figure had

climbed 17 percent since 1983.

That's why our industry is excited about and committed to improving our marketing abilities. We can't wait any longer. The future is today in the meat business. We believe the down swing in meat consumption can be stemmed and eventually reversed.

We are encouraged that the potential, and I want to underscore that word, exists to increase per capita consumption of beef, pork and veal. But we've got to work to achieve this growth.

A study conducted for AMI by Farm Sector Economics Associates advised us to do everything in our power to narrow the relative price between red meat and poultry. This includes being more efficient producers and developing more efficient animals. To spur demand, the report said we must promote the nutritional value of red meat and its taste, the latter being red meat's most saleable characteristic; establish brand identification; and develop new red meat products.

As you can readily see from what I've told you today, we agree. And, more importantly, we're doing it. We have seen stories that talk about our activities. They carry such headlines as: BEEF INDUSTRY BEGINS BATTLE AGAINST FAT....VIDEOS SUCCESSFUL IN SELLING RED MEAT....CATTLEMEN MOVE TO MORE THAN TRIPLE ANNUAL BEEF PROMOTION EXPENDITURES....PRECOOKED MEAT IS NEXT WAVE, AMI SURVEY SHOWS...NUTRI-FACTS: POSITIVE NEWS ON BEEF...and this one that I particularly like...DON'T QUIT MEAT, JUST TO AVOID FAT.

Considerable gloom and doom have followed the meat industry around in recent years. Many stories in the consumer press have inferred that we were headed down the fast track to extinction. Our consumer-oriented attitude, coupled with a real determination to change our products rather than fight the times, make the words of Mark Twin most appropriate: "The reports of my death have been greatly exaggerated." We are alive and on the road to recovery.

I'd now be more than happy to answer any questions you might have about the meat industry.

ANNUAL AGRICULTURAL OUTLOOK CONFERENCE

United States Department of Agriculture
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Outlook '87, Session # 11

For Release: December 3, 1986

POULTRY MARKETING ISSUES

Patrick J. Luby
Oscar Mayer Foods Corp.

The poultry industry has enjoyed three or four years of an unprecedented demand increase and industry profitability. The principal marketing issue would seem to be how to keep the recent momentum.

The commercial poultry industry has had a long record of increasing consumption per person at a decreasing real retail price (Table 1).

Table 1

Poultry Consumption, Price, and Spending at Retail

(% Change)

	<u>Consumption/Capita</u>	<u>Real Retail Price</u>	<u>Est. Real Spending/Cap.</u>
1960 to 1969	37	(18)	12
1969 to 1979	30	(16)	9
1979 to 1986	22	(16)	2

However, when we break down the 1980's into the recession and recovery years, we find that the poultry industry had a very difficult time from 1979 to 1982 but an excellent demand growth period from 1982 to 1986 (Table 2).

Table 2

Poultry Consumption, Price, and Spending at Retail

(% Change)

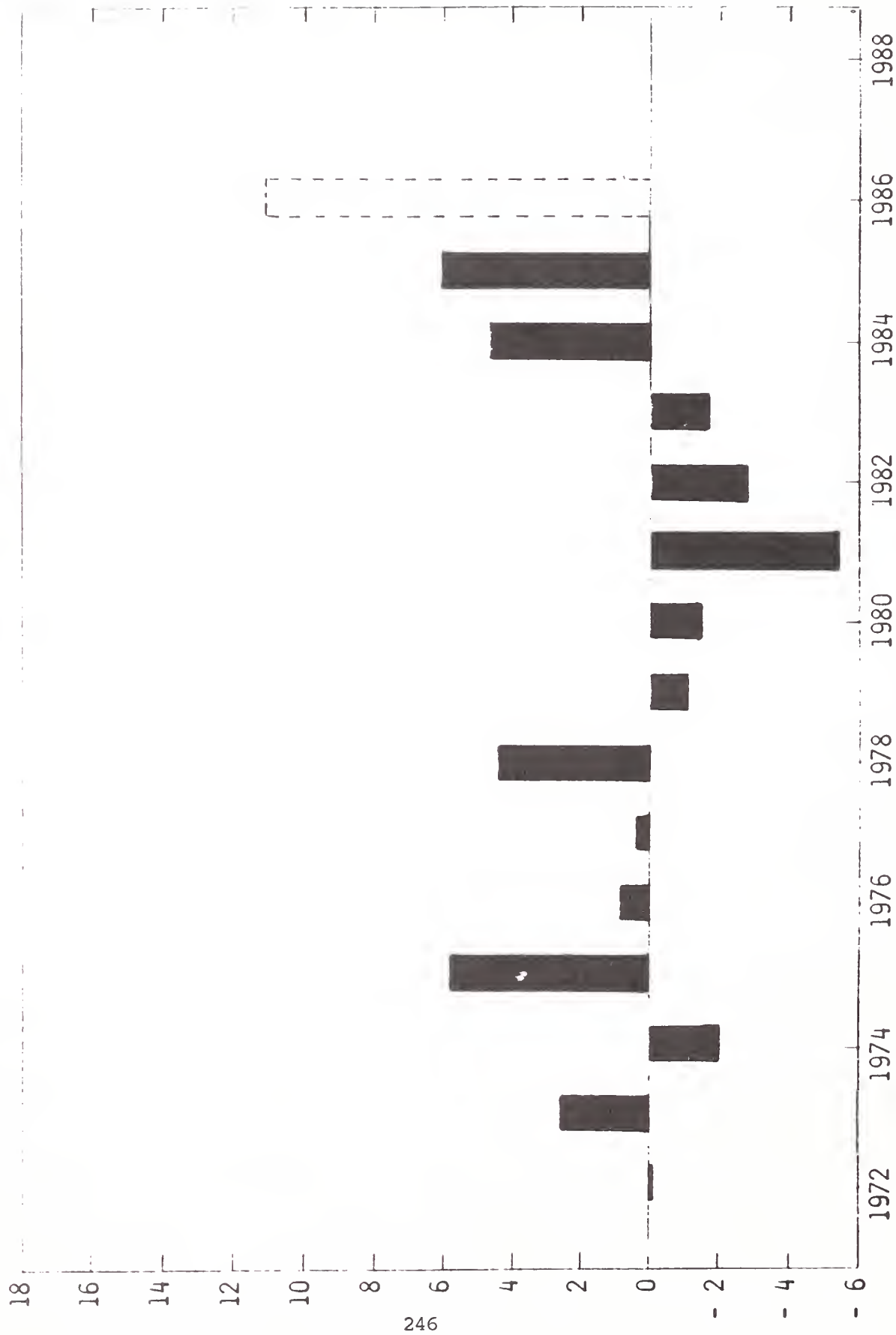
	<u>Consumption/Capita</u>	<u>Real Retail Price</u>	<u>Est. Real Spending/Cap.</u>
1979 to 1982	6	(19)	(14)
1982 to 1986	16	4	21

This recent demand growth coupled with lowering feed prices following the excellent grain crop years of 1984, 1985, and 1986 resulted in excellent financial results from poultry feeding and growing during the last several years (Charts 1 and 2).

Chart 1

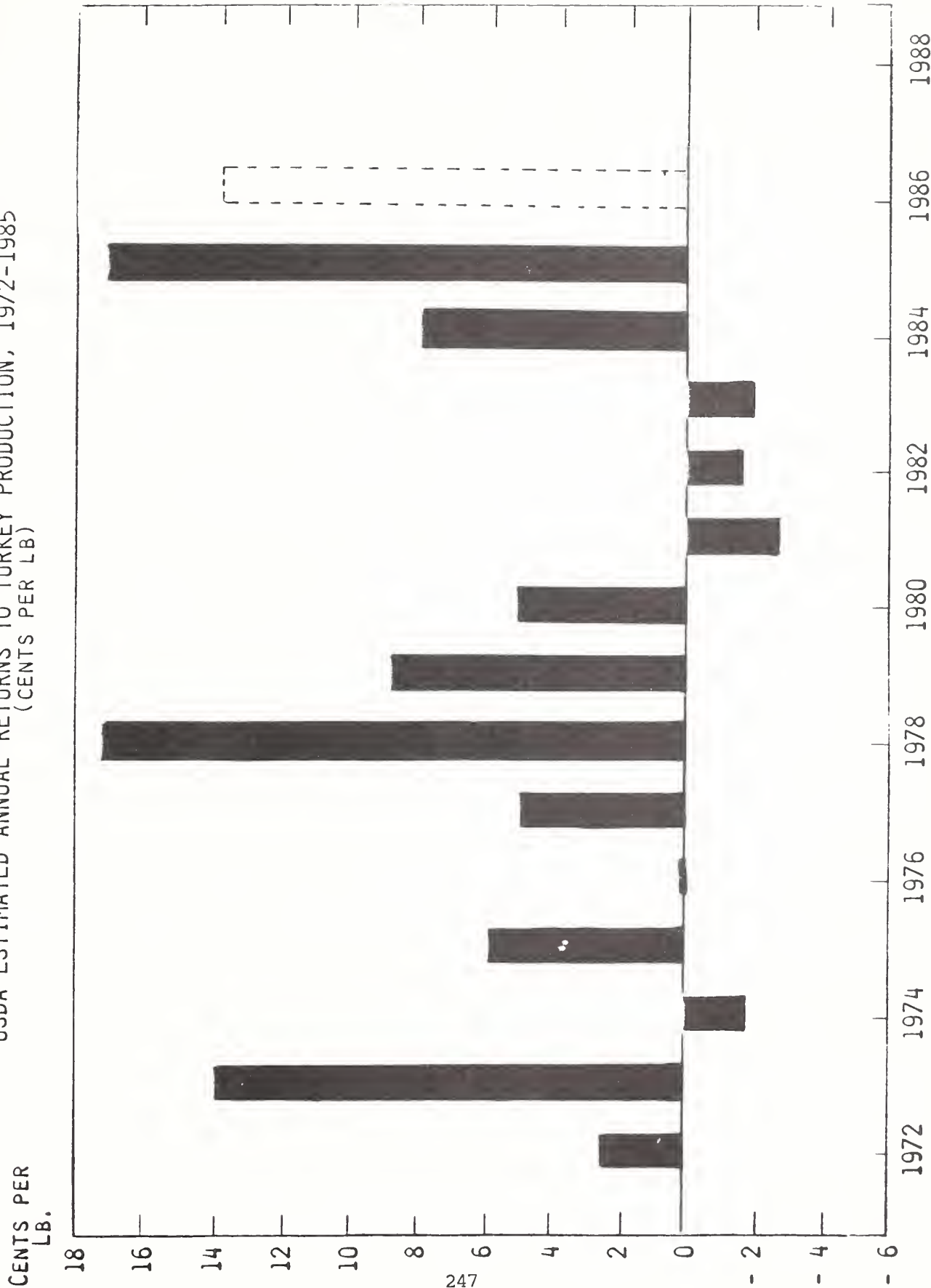
USDA ESTIMATED ANNUAL RETURNS TO BROILER PRODUCTION, 1972-1985

CENTS PER
LB.



Note: 1986 estimate by author.

USDA ESTIMATED ANNUAL RETURNS TO TURKEY PRODUCTION, 1972-1985
(CENTS PER LB)



Note: 1986 estimate by author.

For the first time in the 1982-1986 years, the demand growth in poultry was far greater than that for beef and pork (see Appendix Table).

Why the very rapid change from the long term demand trend of several decades to the last several spectacular years? Has it been marketing genius leaving the only poultry marketing issue as one of how to continue to do the 1983-86 strategies into the future?

There may be as many analyses of the recent poultry success as there are analysts. Here are some possibilities.

1. Lifestyle. The recent increased interest in diet, health, and fitness on the part of the consumer coincided with the poultry meat product which has always been, on the average, leaner than its closest red meat competition. The poultry success has really been a whitemeat success in an era of emphasis on "lite-ness" in foods and beverages.

2. Economy. Poultry meat has continued to be lower in price, on the average, than beef and pork and this may be of special importance in this decade of rather sluggish growth in real consumer spending power. Perhaps the rigors of the 1979-1982 recession on many consumers helped bring about the apparent abrupt shift in demand toward poultry which subsequently occurred.

3. Marketing Improvement. The poultry industry has made great strides in marketing its product. The presentation of chicken and turkey products in retail stores, delis, fast food establishments, restaurants, and in the home has improved considerably in recent years. A much wider variety of items is available at all levels. The products are sized to fit the new realities of smaller households. They are often precooked and packaged to fit the increased consumer need for convenience. They have been improved in quality, consistency, and availability for a mobile, busy, consuming public.

The increased profitability during the last three years, 1984-1986, has resulted from this rapid increase in demand, lowering real feed costs resulting

from three consecutive excellent harvests and the fact that the industry was essentially producing at capacity in 1982 which slowed the supply response to the increased demand allowing prices to remain well above average costs during much of the last three years.

The poultry industry has given the consumers what they want - nutrition, consistent high quality, convenience, increased availability, and increasingly good product presentation and palatability. At the same time, it has been fortunate to have lower costs because of falling grain prices. The result has been the best of all worlds - rising demand, falling costs, prolonged profitability.

Thus, poultry is doing well and one is tempted to say that there are no poultry marketing issues. Just continue what the poultry industry has been doing for the last four years - the most successful three or four year period the industry has ever known.

But perhaps we can still find areas which need attention. The recent surge in popularity for poultry meat has been almost exclusively a breastmeat phenomenon. For turkey, the average wholesale price of breastmeat increased 41% from the average of 1977-1983 to the average of 1984 and 1985 while the composite value of the remainder of the turkey cuts decreased 7% during the same time. For chicken, the average wholesale price of bone-in chicken breastmeat rose 15% from 1982 to 1985 while chicken wing prices decreased 10%, chicken leg prices decreased 5%, and chicken comminuted meat prices fell 10%. Thus, how to successfully market the increased amounts of non-breast meat remains a major challenge for the poultry industry.

An important and immediate issue facing poultry marketers is how to combat the large increase in red meat promotion and advertising that is just now beginning as a result of the greatly increased check-off monies from beef and pork producers. This large addition of competitive promotional fire power and how to combat it will be a big issue for poultry in the immediate future.

Most research indicates that breakfast has been making somewhat of a comeback in the 1980's - particularly as an outside the home eating occasion. Poultry products do not really participate in the sizeable breakfast market and it represents a real challenge to poultry's marketing prowess to be able to establish successful beachheads in this market.

The surge in poultry demand during the last few years appears to be at least partially the result of the trend toward "lightness" and "leanness" in the American consumer taste. Apparently sharing this tendency in recent years is the demand for fish. One of the differences seems to be that the increasing price of fish has not brought about the supply increase that has occurred in poultry. However, progress in aquaculture including the domestic production of fish in ponds may bring about a greater supply at reasonable prices. Poultry may be faced with an increasingly potent challenger by another "light and lean" center of the plate entree in the form of fish. It could become a bigger marketing issue.

More Americans are becoming grazers in their approach to eating. Gone for many are the three square meals a day as an increasingly mobile society eats its way around the clock. A marketing challenge for poultry is to develop products that fit these eating habits. To do so, they must be relatively small, available in many different distribution outlets and convenient in form - precooked, portioned, easy to handle. The poultry industry should try to get better positioned in the increasingly important snack food categories.

Poultry has ridden the light and lean trend very well in recent years. However, some of its success involves nuggets and other fried products. This method of cooking usually results in a product that is higher in fat and calories. This might eventually become a negative to the growth of this sub category of poultry. A marketing issue exists as to whether the poultry industry can develop products and preparation which will preserve and enhance its natural leanness advantage.

Microwave cooking is now an integral part of food preparation in well over half of the American homes and in many foodservice establishments. The development and marketing of a variety of tasteful, attractive poultry products utilizing this cooking technology is an important industry challenge.

Much poultry is sold in fresh form - in food retail stores, in delis. As such it is natural, light and lean - favorable characteristics in today's market. The development of longer keeping times - less perishability - without sacrificing the favorable characteristics - would help in the further market penetration of poultry in our diets.

Turkey remains an important part of the poultry industry as it continues to account for about one-sixth of total poultry production. Although large strides have been made in recent years toward making it a year around part of our food consumption pattern, considerable progress is still to be made. In the 1968 - 1971 period, over half of the disappearance of turkey took place in the fourth quarter and only 12% occurred in the first quarter. Last year less than 41% of the turkey moved in the fourth quarter and over 17% moved during the first quarter. There is still a marketing challenge there. If turkey disappearance in the first three quarters last year was at the same level as during the fourth quarter, total annual turkey consumption would have been 63% higher. We expect to consume about 13.5 pounds of turkey per person in 1986. If this were increased by 63% it would result in 22 pounds per capita consumption. That is two billion more pounds of turkey and represents a continuing marketing challenge for the turkey industry.

Another marketing challenge is one of gaining prestige for the product. While poultry has made considerable progress in gaining a greater proportion of America's meat consumption and expenditures for meat, it is still considered in many markets as a less prestigious meat entree than beef. In many hotel and upscale restaurants one will find a chicken breast meat entree \$4.00 to \$5.00 per serving lower than a beef entree - a difference far in excess of the difference in the wholesale cost

between chicken breastmeat and beef. In many markets, poultry does not command the prestige that beef enjoys. Something for the poultry marketers to work on.

Another marketing challenge for poultry is to achieve less price volatility. While some managers and owners in the industry may prefer to operate with volatile prices, it is generally thought that most marketers prefer less changeable price levels. The wholesale weekly average price for boneless chicken breastmeat so far in 1986 has ranged from \$1.75 per pound to \$2.94 per pound, a difference of 68% from low to high - and they occurred only 23 weeks apart. The range of \$1.19 per pound difference between the low week and the high week for 1986 was a little higher than usual but the range was 58 cents per pound in 1985, 62 cents per pound in 1984 and 83 cents per pound in 1983.

A similar problem of price volatility exists in turkey. For example, boneless fresh turkey breastmeat wholesale prices ranged from a weekly low of \$1.80 per pound to \$3.00 per pound in 1986 and \$1.90 per pound to \$2.70 per pound in 1985.

One issue related to volatility and one which exists as a marketing issue from other points of view is the relatively narrow geographic production base for the industry. The severe southeastern heat and drought of the past summer caused some temporary supply cutbacks and resulted in some of the volatility witnessed in 1986. This relative concentration of production, while being a plus from many operational points of view, could also be a potential handicap should unforeseen problems result from natural disasters or from events such as a disease epidemic. Poultry industry marketers should at least be prepared for such problems while hoping, of course, they never occur.

This brings us to a related point. The poultry industry and its marketers have had great successes during recent years and are on a roll. Except for some excess heat problems and a touch of Avian influenza, the industry has not had many setbacks recently. Almost all of the news from nutritionists and dietary research has been favorable. Continued progress has been made in the efficient production

and processing of the birds. Is the industry and its marketers prepared for any bad news that might occur? What if the external developments would turn less favorable? What if the news from nutritionists would become less favorable? What if large unexpected setbacks would occur in areas of disease, residues, additives, or something that would cause a large scale product recall. Hopefully, nothing like this will ever occur but marketers must be always alert and prepared to deal with potential negative situations.

In 1985, according to USDA data, chickens and turkeys accounted for only 16% of the consumer expenditures for poultry, beef, and pork. So an overriding marketing issue for poultry is how to get at that other 84% - a huge market. While our meat diet is now about one-third poultry, we only expend about one-sixth of our meat dollars for it. Poultry has the great advantages of being on the average a leaner meat and lower in cost because it costs less to produce. Despite these considerable advantages, American consumers still spent five times more money for beef and pork than they do for poultry. That's over 70 billion dollars that is spent for red meat - a considerable challenge for white meat, particularly in view of the fact that now the red meat industry is aroused and fighting back as never before.

The recent profitable years and abundant, low cost feed are likely to bring considerably more poultry production during the remainder of this decade. This is not time for the poultry industry to sit on the spectacular successes of the recent past. There are marketing issues aplenty. The industry's marketing prowess will continue to be tested in a market environment that is always changing and always challenging.

PJL 1-4:jlb

November 7, 1986

Appendix Table

Meat Consumption, Price, and Spending at Retail

(% Change)

	<u>Consumption/Capita</u>	<u>Real Retail Price</u>	<u>Est. Real Spending</u>
1960 to 1969			
Beef	22	0	22
Pork	0	8	8
Poultry	37	(18)	12
1969 to 1979			
Beef	(6)	13	6
Pork	5	0	5
Poultry	30	(16)	9
1979 to 1982			
Beef	(1)	(19)	(20)
Pork	(8)	(10)	(17)
Poultry	6	(19)	(14)
1982 to 1986			
Beef	1	(14)	(13)
Pork	(2)	(8)	(10)
Poultry	16	4	21

ANNUAL AGRICULTURAL OUTLOOK CONFERENCE

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Outlook '87 Session #12

For Release: Wednesday, December 3, 1986

U.S. AND WORLD COTTON OUTLOOK

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Washington, D.C.

INTRODUCTION

Seldom has economic price theory been as vividly demonstrated in the real world as in the case of cotton over the past year or two. This theory postulates that changes in the price of a commodity are associated with changes in the same direction in production of that commodity, changes in the opposite direction in consumption, and changes in the same direction in consumption of competing commodities, ceteris paribus. For example, as the price of a commodity increases, production increases, consumption declines, and use of substitutes increases, other factors remaining unchanged. In order to set the stage for a discussion of the U.S. and world cotton outlook for 1987 and beyond, I will briefly analyze some simple relationships between cotton prices and cotton production, consumption, and trade. The price impact on cotton consumption and trade shares is particularly striking.

IMPACT OF PRICE ON COTTON SUPPLY AND DEMAND

The cotton price series of consequence is the CIF Northern Europe "Outlook A" Index. It is the average of the five cheapest growths of Middling 1-3/32-inch cotton offered for sale in Northern Europe and is considered to be the most representative world cotton price series. These prices have been extremely volatile over the past decade. They rose during the late 1970's, reaching a peak of nearly a \$1.00 per pound in the fall of 1980. After dropping off somewhat, prices peaked again in 1983 at about 90 cents per pound, prior to falling sharply to less than 40 cents in July and August 1986. Since August, prices have recovered to the current level of about 52 cents per pound (Figure 1).

These roller-coaster like price movements have had a significant impact on U.S. and world cotton supply and demand over the past decade and especially during the past couple of years. Figure 2 illustrates the curvilinear relationship between calendar year world prices and the ratio of global stocks to consumption. During 1977-84, the stocks to use ratio generally fluctuated between 0.3 and 0.4 and prices averaged 75-85 cents per pound. However, the ratio increased sharply to over 0.6 in 1985 and 1986 and prices dropped to less than 60 cents per pound.

Production

Let's look briefly now at the impact of world cotton prices on production. Of course, price influences output mainly through its impact on area planted to cotton. In addition to price, many other factors affect area, including government policy, competition with other crops, and weather. Because of the lack of alternative crops and the importance of cotton exports to their economies, many smaller producing countries do not react significantly to changes in cotton prices, especially to price declines. Furthermore, domestic policies in some major producing countries with large textile industries, such as China and India, are geared to maintaining and expanding acreage and production for internal consumption, with little consideration for prices. For these reasons, cotton price alone is not a strong indicator of area. Even so, it is evident from Figure 3 that current low prices of about 52 cents per pound, which are only slightly above last season's level, suggest little or no increase in world cotton area in 1987/88.

Consumption

As in the case of production, price is only one factor among several that influence global cotton consumption. Over the past decade, cotton use has trended up steadily, primarily reflecting population and income growth around the world. The average annual growth has been about 1.5 million bales (Figure 4). During the late 1970's, consumption increased faster than trend, then slowed in the early 1980's, prior to increasing sharply over the past two years.

Changes in cotton prices were very instrumental in explaining these year-to-year deviations from trend consumption, accounting for nearly 95 percent of the variation. During the 1980's, a 10-percent change in price has been associated with about an 0.8-million-bale change in consumption in the opposite direction, holding population and income (as represented by trend) constant (Figure 5).

Trade

Cotton prices impact not only world production and consumption, but also trade. Figure 6 shows the significant inverse relationship between the ratio of U.S. to world prices and the U.S. export share. Relative price changes were responsible for nearly 90 percent of the movement in our export share over the past decade. This was particularly evident during 1985/86 when excess supplies caused world prices to fall sharply below U.S. prices, which were supported by the 57.3-cent-per-pound loan rate. In other words, U.S. prices were 32 percent above world prices last season and our export share dropped from 31 percent to 10 percent, meaning an export decline from 6.2 to 2.0 million bales. This season, the new cotton program once again has made U.S. prices competitive in world markets and our export share is expected to rebound to a more normal level of nearly 30 percent.

OUTLOOK FOR 1986/87

World

With recent relatively low cotton prices prompting smaller global 1986/87 acreage and production, and encouraging larger consumption, stocks are being worked down moderately from the record beginning level (Table 1 and Figure 7). Production is forecast at 72.1 million bales, nearly 7 million below 1985/86. Output is down both here and abroad. Among the major foreign producing countries, production is projected down 7 percent in India, 5 percent in the Soviet Union, and 3 percent in China and Pakistan. A shortage of irrigation water is trimming the Soviet crop to the lowest level since 1973/74. As of early November, Soviet production was estimated at 11.5 million bales. However, more recent reports from the Soviet Union indicate production may not reach 11.5 million bales. China, with a crop estimated at 18.4 million bales, easily remains the world's largest cotton producer.

Global cotton consumption is projected at a record 77.1 million bales, up 2.4 million from 1985/86. Countries expected to post the sharpest increases include Taiwan (up 16 percent), the United States (up 10 percent), Hong Kong (up 9 percent), Pakistan (up 7 percent), Brazil (up 6 percent), and India and South Korea (up 3 percent). China, the number one consumer, will account for nearly one-fourth of world use. In addition to low cotton prices relative to alternative manmade fibers, cotton use is benefiting from strong consumer preference for the natural look in a number of countries around the world.

World cotton stocks at the end of this season may total slightly over 42 million bales, down nearly 6 million from a year earlier. The United States is expected to account for two-thirds of the reduction. Stocks may decline about 2 million bales in China. Even so, China's projected stocks of 16.5 million bales comprise nearly one-half of foreign stocks. Elsewhere, stocks are anticipated to change little this season. In addition to China, stocks remain excessive in India, Pakistan and Brazil.

With this season's abundant cotton supplies, low prices, and improved demand, global trade may total about 23 million bales, up 2.5 million from 1985/86, and the largest since the record trade of 1979/80. The United States is expected to garner nearly 30 percent of the total, followed by the Soviet Union, Pakistan, and China, each with about a 12-percent share. This represents a marked turnaround from last season when Pakistan and China, along with other competitors such as Australia and India, took markets away from the United States (Figure 8).

United States

In the United States, disappearance well in excess of production and a sharp decline in stocks highlight the 1986/87 cotton outlook. The crop of nearly 10 million bales is off 3.5 million from last season, reflecting both smaller area and weather-reduced yields. At the same time, combined mill use and exports are expected to total 13.8 million bales, up more than 5 million from last season's extremely low level. While mill use is projected up about one-tenth

to 7 million bales, exports may total 6.75 million, 3-1/2 times the disastrous 1985/86 performance. As discussed earlier, competitive cotton prices are playing a major role in these gains. This season's ending stocks are placed at 5.6 million bales, down from 9.3 million on August 1, 1986, but still about 1 million above the 1980-84 average (Figure 9).

OUTLOOK FOR 1987/88

World

Given the multitude of factors which influence world supply and demand for cotton, there are many unknowns and uncertainties with which to contend as we look ahead. Nevertheless, current economic conditions and policies, along with recent trends, provide some basis for analysis. With this in mind, let's examine some possibilities for global cotton supply and demand in 1987/88.

The world cotton production outlook is extremely uncertain, primarily reflecting the difficulty in projecting highly variable yields. Area devoted to cotton is more stable and is easier to ascertain. As discussed earlier, little increase in area is likely if prices at planting time remain near current levels. Even a change in prices would result in relatively little change in area, given the small acreage elasticities evident in Figure 3. Yields, on the other hand, could vary significantly, primarily depending on weather. If yields next season remain near the below-trend average of 1986/87, production would total close to this season's 72 million bales. However, if yields bounce back to the 10-year trend level of 558 kilograms per hectare, 9 percent above this season, production could total 78-80 million bales in 1987/88 (Figure 10). In addition to the United States, countries which could see larger production next season include the Soviet Union, Australia, and some of the Central and South American countries.

If growth in population and income continue to follow recent trends and cotton prices continue low relative to manmade fibers, world cotton consumption will likely set another record next season, barring a slowdown in economic activity and more intensive protectionism from textile importers. At a minimum, consumption should match 1986/87's 77 million bales. Under more favorable economic conditions, global cotton use could expand 2-3 million bales if China and major cotton-importing nations show further growth.

World cotton trade in 1987/88 will depend on the availability of supplies in exporting countries and the level of consumption in importing countries. Figure 11 shows that imports account for about 30 percent of global use and have increased recently in response to larger use. Imports in 1987/88 could increase slightly if consumption continues to improve. The United States, China, Pakistan, and other foreign exporting countries will compete vigorously for these markets.

So, both 1987/88 world cotton production and consumption are likely to increase. If the factors mentioned above materialize, output and use next season would increase about 10 percent and 2 percent, respectively. This would place production and consumption about in balance in the range of 77-80 million

bales, meaning little change in stocks and a continued burdensome high level equal to more than 50 percent of use.

United States

The early-season outlook for U.S. cotton in 1987/88 points to the likelihood that disappearance again will exceed production, resulting in a further decline in stocks. This is based on upland cotton program provisions which will again limit planted acreage and continue to encourage use through competitive cotton prices in domestic and export markets.

The cotton program provisions stem from the Food Security Act of 1985. The purpose of the program is three-fold: to protect U.S. cotton farm income, to make U.S. cotton competitive in domestic and export markets, and to get U.S. supplies back in line with demand. The Act authorizes the Secretary of Agriculture to impose a voluntary acreage reduction program up to a maximum of 25 percent of farmers' base acreage. Producers who agree to participate receive substantial program benefits. During 1986/87, producers will receive cash payments and marketing certificates estimated at \$1.5 billion. In addition, inventory protection and first handler certificate payments are estimated at \$0.9 billion.

For the 1987 upland cotton crop, the Secretary has announced that the maximum 25-percent acreage reduction program will be in effect, the same as in 1986. The target price will be 79.4 cents per pound and the loan rate will be 52.25 cents for base-quality cotton. If the adjusted world price is below the loan rate, marketing loan plan B will be in effect. Plan B allows producers to repay price support loans at the lower of the loan rate or the adjusted world price. However, if the world price is less than 80 percent of the loan rate, a repayment rate between the world price and 80 percent of the loan rate (41.8 cents for base quality) may be established.

We expect good participation in the 1987 cotton program, although probably below this year's 91 percent. Participating farmers will likely plant their maximum allowable acreage which means that planted acreage next season could total around 10 million, compared with 9.5 million in 1986. Given yield variability, production could range from 9.5 to 13.5 million bales. Trend yields would indicate a crop approaching 12 million bales.

The legislation ensures that U.S. cotton will be competitive in world markets by allowing prices to fall below the loan rate to the prevailing world market price, adjusted to the United States. This means that farmers can take out a loan at 52.25 cents per pound for base quality cotton and sell at competitive prices in domestic and export markets. The adjusted world price is based on Northern Europe price quotations.

Competitive U.S. cotton prices next season again bode well for mill use and export prospects. Unless relative fiber prices change dramatically to the detriment of cotton, strong consumer demand will continue to encourage U.S. mills to emphasize cotton. However, intense competition from cotton textile imports makes it unlikely that U.S. cotton mill consumption will rise much above the current 7-million-bale rate.

On the U.S. cotton export front, sales will hinge on import demand by consuming countries and competition from other major cotton exporters, particularly China and Pakistan. With competitive prices, the United States should be able to maintain its current market share of about 30 percent. This points to U.S. exports in the range of 6 to 7 million bales.

If U.S. cotton disappearance exceeds production again in 1987/88, stocks would likely be worked down closer to the desired 4-million-bale level specified in the Food Security Act of 1985.

OUTLOOK FOR 1990

Longer-term prospects for global cotton indicate that production and consumption will likely continue their upward trends. In the case of production, acreage could gradually expand, depending on policies in major producing countries as well as the price outlook. If yields continue to trend up at the 3-percent average annual rate of 1977-86, production could total 80 to 90 million bales by 1990. China in all likelihood will continue as the world's leading producer.

U.S. cotton production still will be governed by the Food Security Act of 1985. Given this country's tremendous production potential, acreage reduction programs will likely continue to be needed to help balance supply and demand, and maintain stocks at the desired level of around 4 million bales.

If cotton prices remain competitive with manmade fibers and the recent upward trend in world cotton consumption is maintained for the next several years, use may total 80-85 million bales by 1990. This projection assumes, of course, the absence of a world economic recession during the rest of the 1980's. As with production, China in all likelihood will continue as the world's largest consumer. Continuing intense competition from textile imports will probably restrict further growth in U.S. mill use.

This scenario of world cotton production at least matching and perhaps exceeding consumption during the late 1980's implies that stocks will remain excessive (Figure 12). Such a situation would prevent prices from returning to the higher levels prevailing in the early 1980's. This would not bode well for U.S. cotton producers, who are heavily dependent on Government programs, or for many foreign producers who have limited alternatives and whose countries depend on cotton as a major earner of foreign exchange.

Although world cotton stocks may remain relatively high, there is considerable uncertainty about the exact level due to the situation in China which, according to latest USDA estimates, has nearly 40 percent of world stocks. Chinese stocks as of August 1, 1986, are estimated at 18.4 million bales, at least three times the amount normally required by their mills. Some observers suggest that our consumption estimates for China are too low and our stocks too high, while others maintain the opposite is true. In either case, USDA estimates of China's use and stocks are still subject to revision as more evidence and data become available. We are fairly confident, however, that only a portion of China's total stocks is exportable. In addition, it is

obvious that some of the stocks are, or will become, unuseable because of storage problems. Recent reports that China has suspended export sales of some grades of cotton suggest that useable stocks are below current estimates. Thus, we expect Chinese stocks to be worked down to more normal levels by 1990, helping to reduce the world surplus.

In summary, the world cotton outlook for 1990 points to production and consumption in the range of 80 to 90 million bales. Stocks could ease somewhat, depending on the situation in China. Given its size and importance to world cotton, developments in China will crucially impact the economic health of U.S. and global cotton in the years ahead.

Table 1--World Cotton Supply and Distribution, 1980/81-1986/87

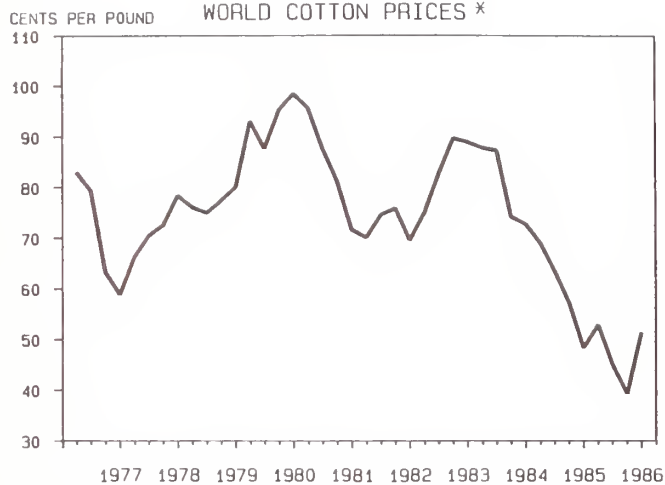
	1980/81	1981/82	1982/83	1983/84	1984/85	1985/86	1986/87	1987/88
<u>Beginning stocks:</u>								
World	21.2	21.2	25.2	25.0	25.0	43.0	48.0	42.4
U.S.	3.0	2.7	6.6	7.9	2.8	4.1	9.3	5.6
Foreign	18.2	18.5	18.6	17.1	22.2	38.9	38.6	36.8
USSR	2.2	2.6	2.5	1.8	2.3	2.6	2.7	2.6
PRC	1.5	2.4	1.9	3.0	7.8	19.8	18.4	16.4
Pakistan	.6	.2	.2	.2	.1	1.0	1.1	1.3
Other Exporters	7.9	7.6	8.2	6.7	6.5	10.0	10.8	10.5
Importers	6.0	5.7	5.8	5.4	5.5	5.5	5.6	6.0
<u>Production</u>								
World	65.0	71.2	68.1	67.7	88.1	78.9	72.1	
U.S.	11.1	15.6	12.0	7.8	13.0	13.4	9.9	
Foreign	53.9	55.5	56.1	59.9	75.1	65.5	62.2	
USSR	13.5	13.3	11.9	12.1	11.9	12.1	11.5	
PRC	12.4	13.6	16.5	21.3	28.7	19.0	18.4	
Pakistan	3.3	3.5	3.8	2.2	4.6	5.7	5.5	
Other Exporters	22.5	22.9	22.1	22.4	27.8	26.3	24.3	
Importers	2.2	2.2	1.8	1.9	2.1	2.4	2.5	
<u>Imports</u>								
World/Foreign	20.7	20.0	19.8	20.6	20.5	21.3	22.8	
USSR	.2	.1	.5	.8	.8	.6	1.0	
PRC	3.6	2.1	1.1	.3	.1	1/	1/	
Pakistan	1/	1/	1/	.3	1/	1/	1/	
Other Exporters	.1	.2	.1	.2	.3	.8	.7	
Importers	16.8	17.6	18.1	19.0	19.3	19.9	21.1	
<u>Consumption</u>								
World	66.0	66.1	68.2	68.7	69.8	74.6	77.1	
U.S.	5.9	5.3	5.5	5.9	5.5	6.4	7.0	
Foreign	60.1	60.9	62.7	62.8	64.2	68.2	70.1	
USSR	9.2	9.2	9.2	9.2	9.5	9.7	9.8	
PRC	15.1	16.2	16.4	16.0	15.5	17.5	17.5	
Pakistan	2.0	2.2	2.4	2.0	2.3	2.3	2.5	
Other Exporters	14.8	14.2	15.0	15.3	16.3	17.4	17.9	
Importers	19.0	19.0	19.7	20.3	20.6	21.3	22.4	
<u>Exports</u>								
World	19.7	20.2	19.4	19.2	20.4	20.5	23.0	
U.S.	5.9	6.6	5.2	6.8	6.2	2.0	6.8	
Foreign	13.8	13.7	14.2	12.4	14.2	18.5	16.3	
USSR	4.1	4.3	3.9	3.2	2.9	3.0	2.8	
PRC	1/	0	0.1	0.8	1.2	2.8	2.8	
Pakistan	1.5	1.1	1.3	.4	1.3	3.1	2.7	
Other Exporters	7.8	7.8	8.5	7.3	8.2	8.8	7.1	
Importers	.4	.5	.4	.7	.6	.8	.9	

1/ Less than 50,000 bales.

(WCR# 6)

FIGURE 1

WORLD COTTON PRICES *



* NORTHERN EUROPE OUTLOOK "A" INDEX, FOURTH QUARTER 1986 BASED ON 7 WEEKS' DATA

FIGURE 2

WORLD COTTON PRICES AND STOCKS TO USE RATIO

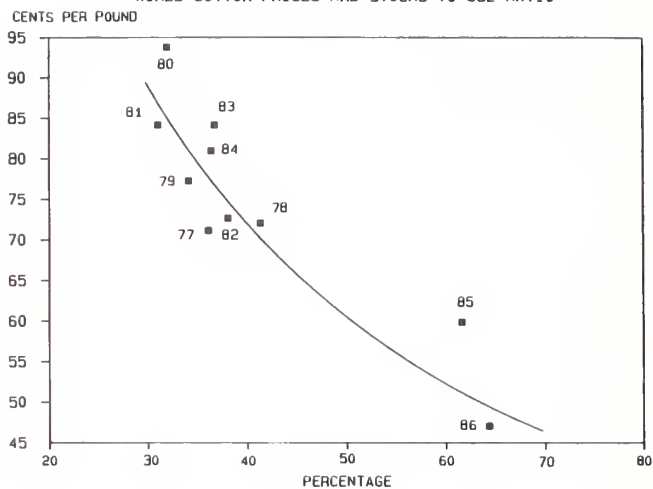
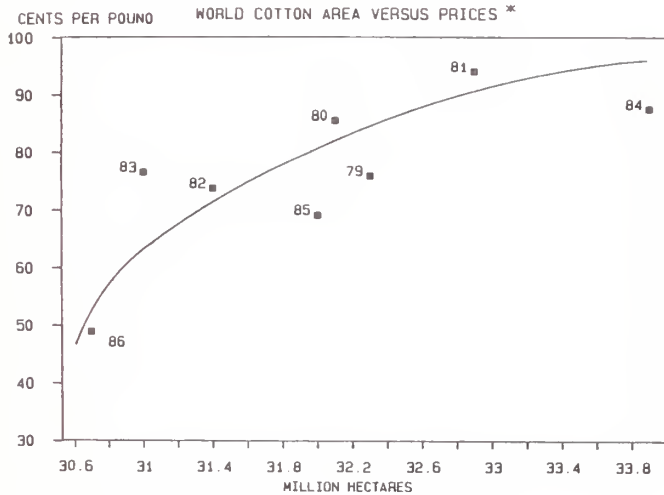


FIGURE 3

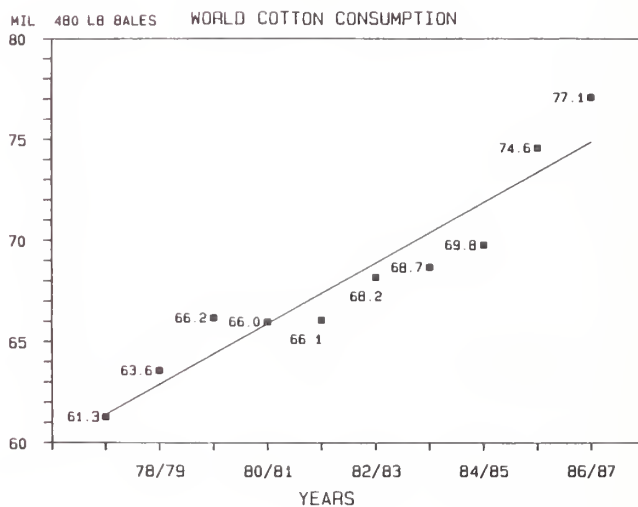
WORLD COTTON AREA VERSUS PRICES *

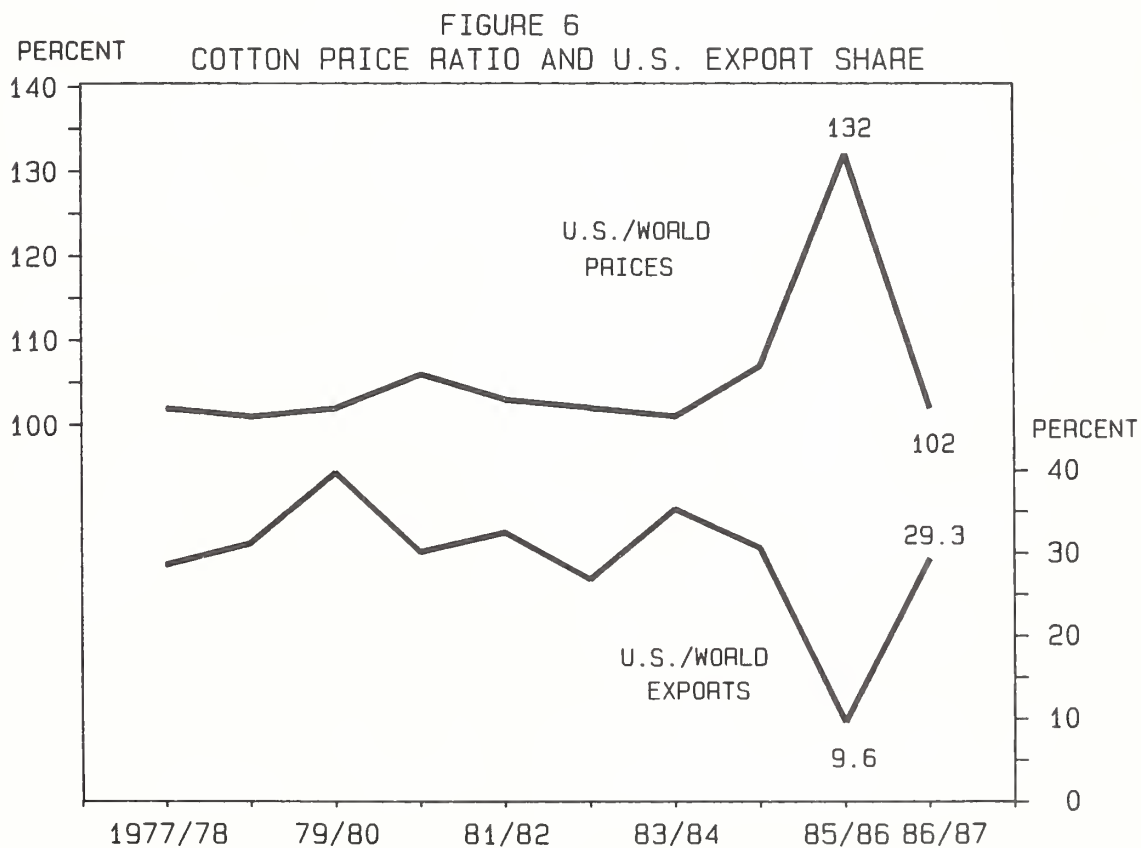
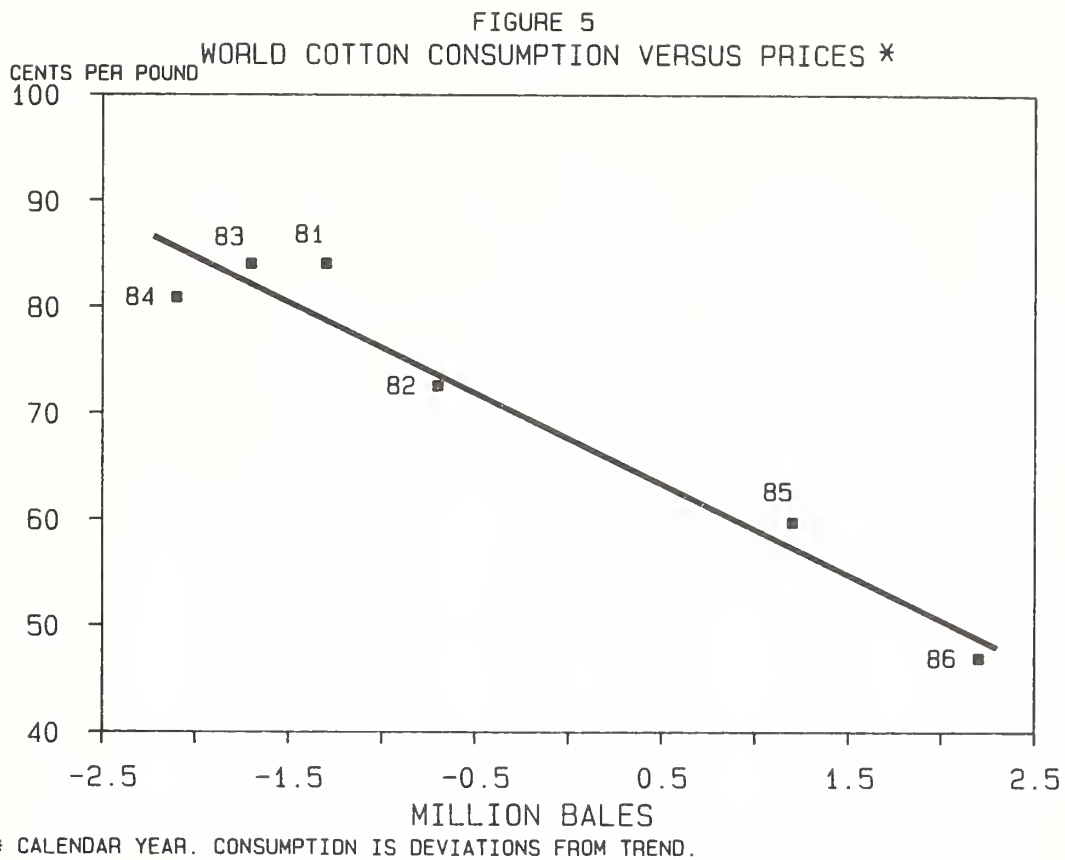


* NORTHERN EUROPE OUTLOOK "A" INDEX FOR PREVIOUS YEAR

FIGURE 4

WORLD COTTON CONSUMPTION





MIL. BALES
100

FIGURE 7
WORLD COTTON PRODUCTION, CONSUMPTION AND STOCKS

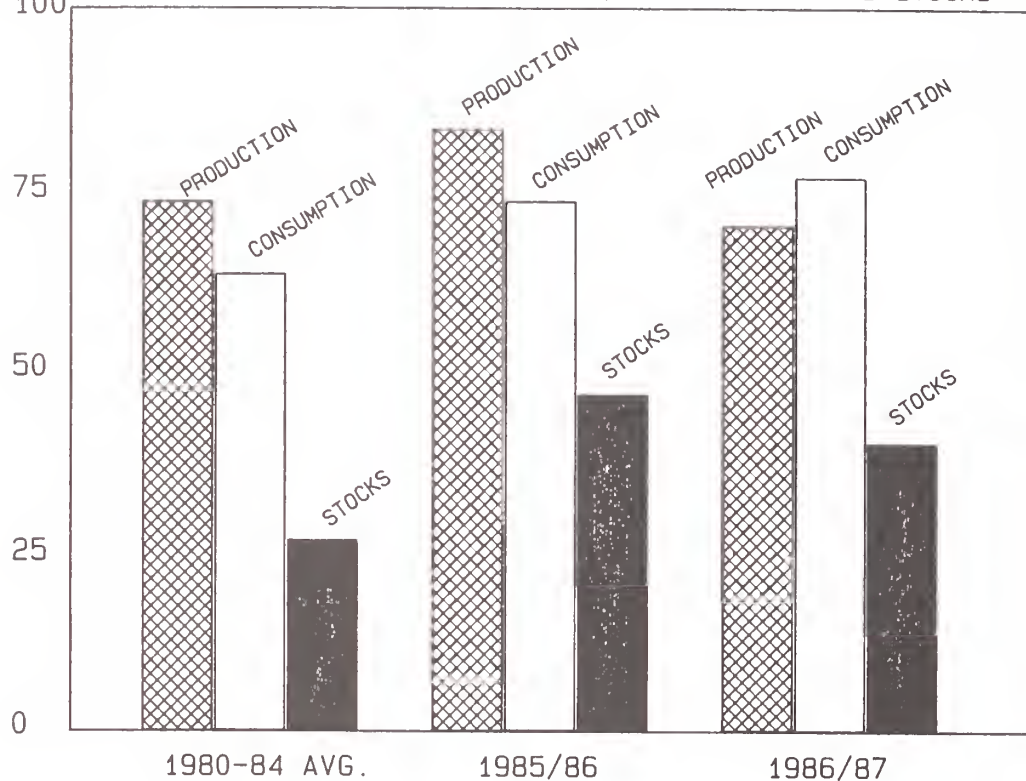


FIGURE 8
WORLD COTTON TRADE *

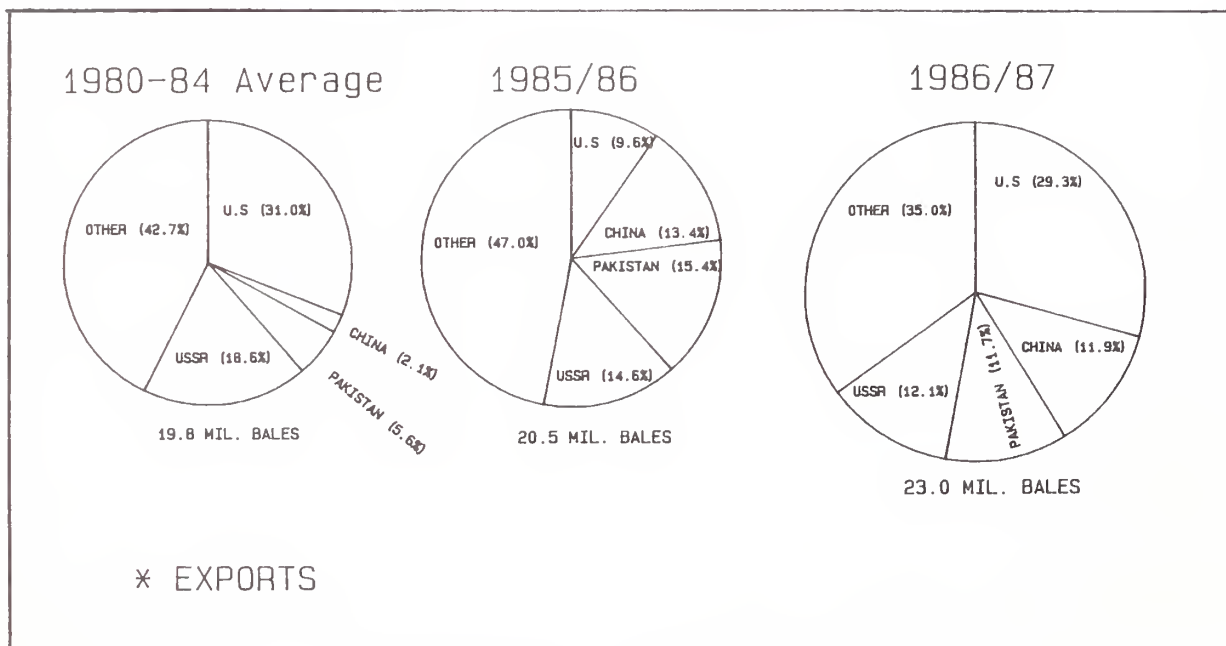


FIGURE 9
U.S. COTTON PRODUCTION, DISAPPEARANCE AND STOCKS

MIL. BALES

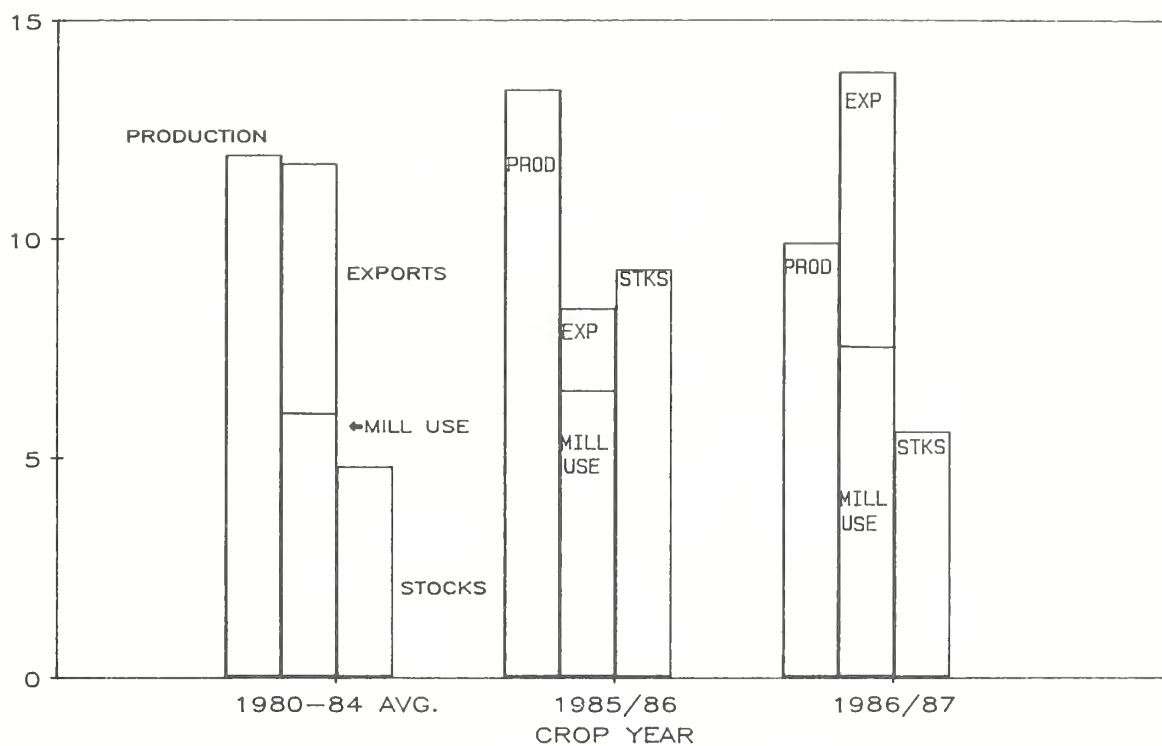
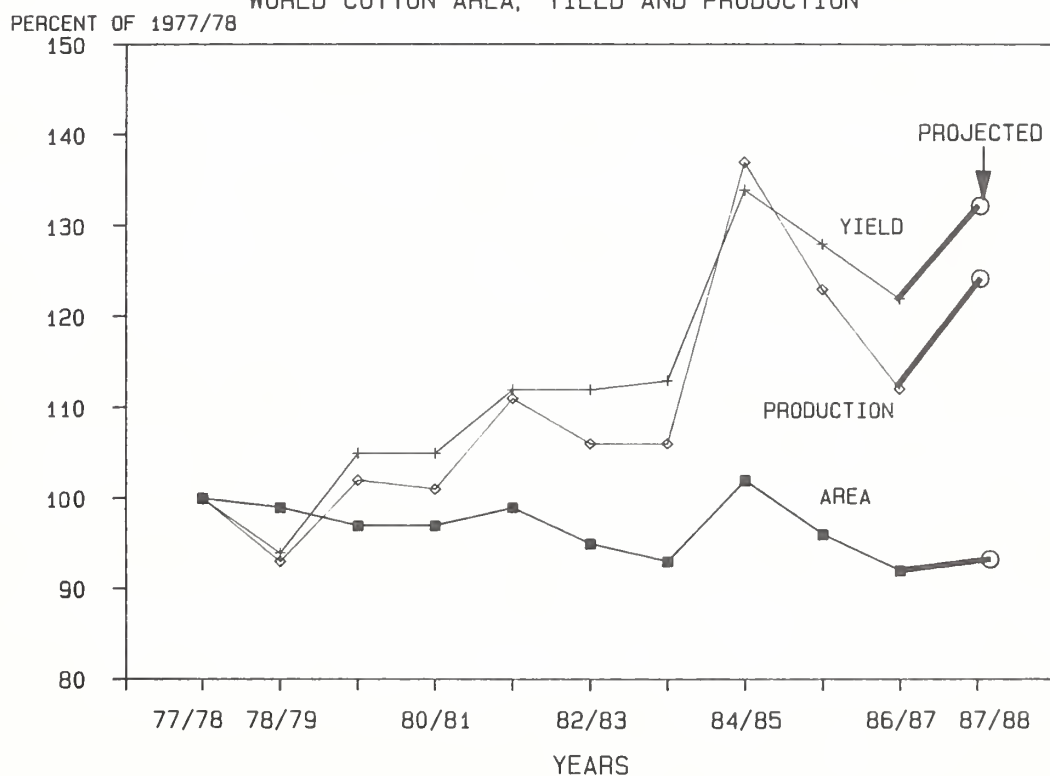
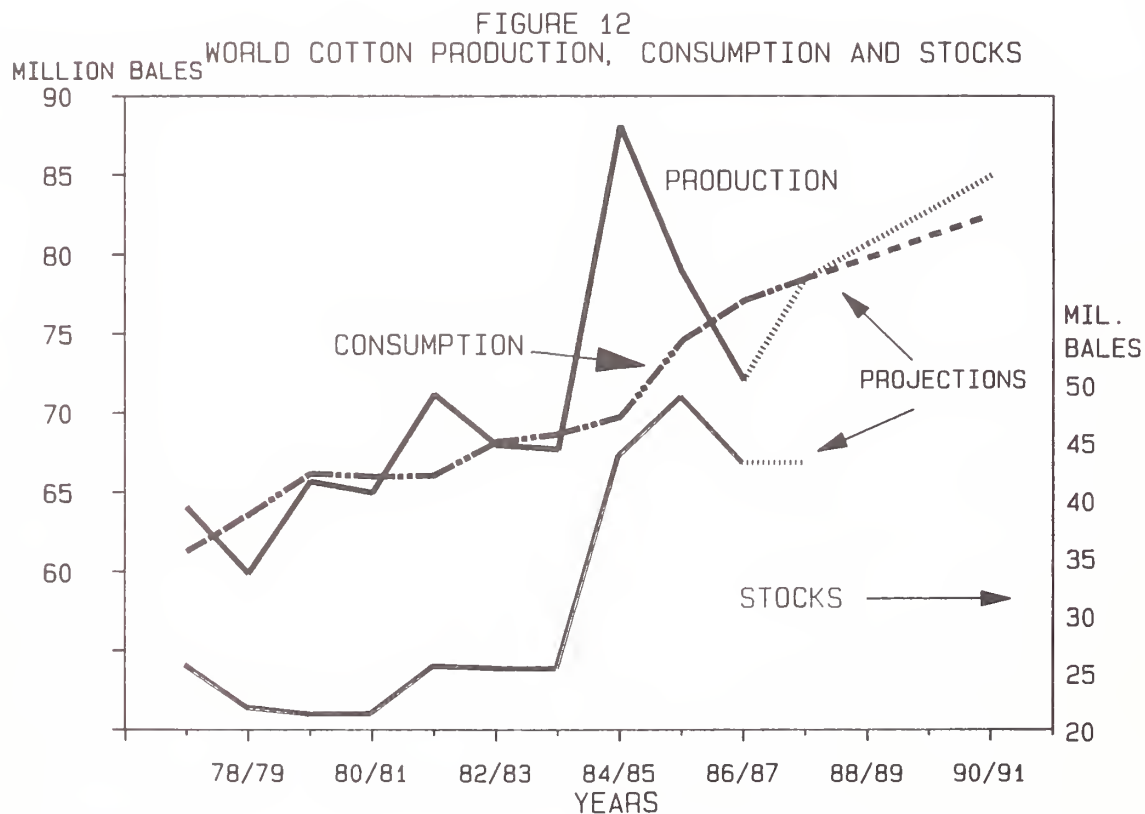
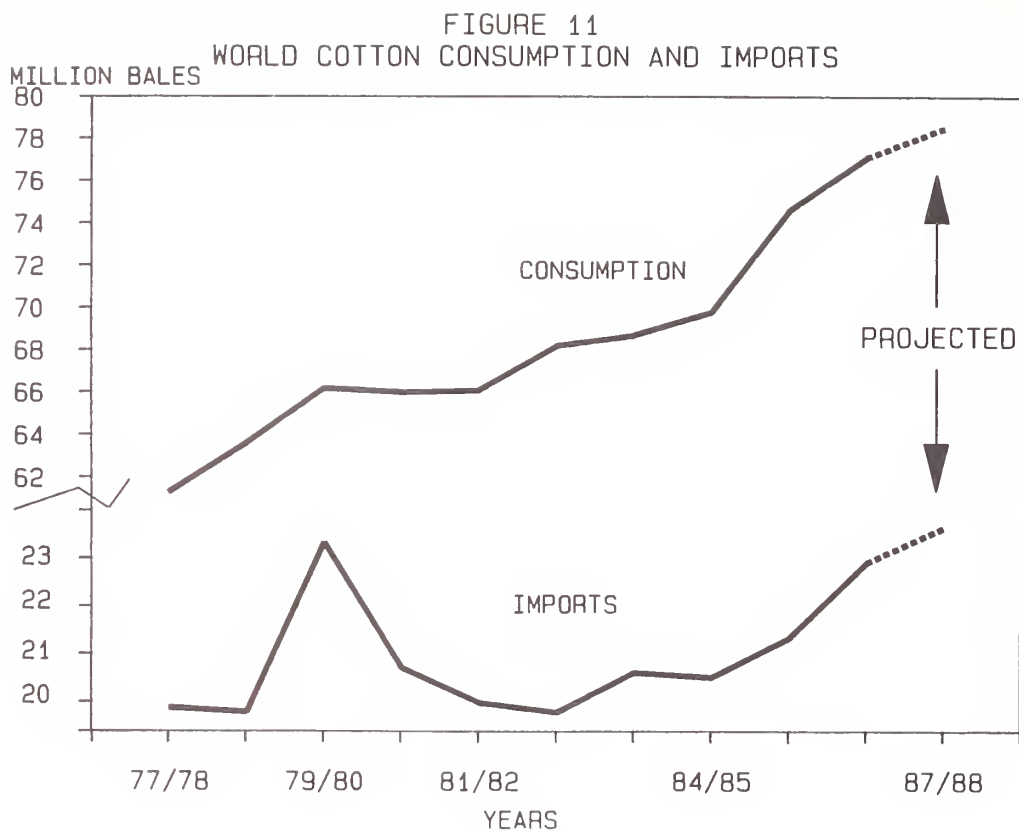


FIGURE 10
WORLD COTTON AREA, YIELD AND PRODUCTION





ANNUAL AGRICULTURAL OUTLOOK CONFERENCE

United States Department of Agriculture
Washington, D.C.



Outlook '87, Session # _____

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COTTON EXPORT MARKETING IN THE LATE 1980'S

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Prospects for maintaining U.S. cotton exports near levels prior to 1985 for the rest of the decade are good. Early signals from the marketing loan and a competitive price indicate that cotton shipments overseas are rapidly recovering from recent setbacks. Foreign cotton consumption is rising at an accelerated rate pushing world cotton trade to a higher level while reducing stocks. For the U.S., lower interest rates and a weaker dollar are giving the new cotton program a big boost.

Foreign Production Down

Foreign production for 1986 may fall almost 8 million bales short of mill use, the largest gap in ten years. With the U.S. price floor under world cotton prices removed by the marketing loan, lower acreage in many countries has dropped production well below rising consumption.

Acreage and production are down in a number of countries including Mexico, Central America, Brazil, Turkey, Australia, India, Pakistan, and Egypt. While yields remain high in the People's Republic of China (PRC), plantings have decreased substantially due to reduced government incentives. The official cotton procurement target is set at 19.52 million bales for the five-year plan 1986-90. Acreage in Russia is holding around 8.2 million, with yields trending downward for the last decade.

Foreign Consumption Up

Cotton consumption is expanding at a rapid pace because of several factors that should benefit U.S. export markets. Natural fibers are growing in popularity in many apparel uses in industrialized countries.

The PRC has taken special measures to encourage their cotton consumption. And, there are plentiful cotton supplies at lower prices that are very competitive with man-made fibers. Foreign countries showing favorable signs of using more cotton are PRC, India, Pakistan, Taiwan, Egypt, Brazil and Russia.

Cotton mill activity appears strong in Asia. Consumption gains are expected in the Far East in the textile producing countries. Of course, these countries are highly dependent on raw cotton imports to support textile exports. Protectionistic restrictions by importing countries and competition from

exporters like the PRC greatly affect the international textile market. Cotton use in Western Europe is moving ahead slightly.

International Cotton Trade Expanding

World cotton trade in 1986 is expected to expand some 2 million bales to more than 22 million bales. That is the highest level since 1979 when the PRC alone imported 4.1 million bales. Trade has increased largely because of rising consumption in the Far East, very competitive prices with synthetic fibers, a slight replenishment of low stocks in importing countries, and improved demand in general. With the trade-oriented provisions of the cotton marketing loan, trade patterns of U.S. cotton exports for the 1986 season are in line with shipments in years prior to 1985. The U.S. has strong prospects of regaining its past market share of around 30 percent of the raw cotton traded internationally.

International cotton trade flows from several large countries and a number of smaller developing countries. The largest U.S. competitors are Russia, Pakistan, PRC and Australia. Some of the smaller countries exporting cotton include Syria, India, Sudan, Egypt, Paraguay, Israel, Turkey and Columbia.

The competing countries are mostly state traders and/or countries where the government supports the cotton industry in some meaningful way. Russia does not appear to have much incentive to expand exports. Traditionally, Russia has exported mainly to the Eastern European countries. With acreage fairly stable and yields declining, exports have dwindled from 4.3 million bales in 1980 to 2.8 million expected in 1986. As a result, Russia is not expected to be a significant force in cotton trade.

The official PRC procurement target of 19.5 million bales in 1986 suggests that production is primarily aimed at fully meeting domestic textile needs that have grown to near 18.0 million bales. Cotton exports from the PRC appear to be mainly a desire to draw down existing stocks.

The PRC has shifted from importing 4.1 million bales in 1979 to an expected exporter of more than 2.7 million bales in 1986. Production in the PRC leaped from 10.1 million in 1979 to 28.7 million in 1984, with 18.4 million expected in 1986. The surge in production was mostly due to production incentives by the PRC government. Consequently estimated carryover stock levels in the PRC of 16.5 million bales are a major factor in upholding foreign cotton stocks. It appears that the PRC government is far more interested in expanding textile exports than raw cotton.

Most developing countries of the Western Hemisphere, Asia and Africa that export some cotton have large debt loads. Therefore, their capacity to spend on enhancing cotton production for export markets seems to be limited.

Strong U.S. Export Markets Likely

Export marketing prospects for the late 1980's may be in the 6-7 million bale range, provided the U.S. keeps a flexible cotton program with a marketing loan

provision.

Trade patterns for U.S. exports may be altered only slightly by shifts in foreign production. Since exports from Russia have declined, shipments may increase a little to the European market with major markets remaining in Asia - Japan, South Korea and Taiwan.

Ending stocks-to-use in the import nations are running in the 27 to 28 percent range, the same as during most of the 1980's. And, foreign production as a percent of use has declined to levels in the late 1970's and early 1980's when U.S. exports averaged in the range of 6 to 7 million bales per season.

Production in export nations has dropped from 75 percent more than use in 1984 to only 30 percent greater than use. This production-to-use level is also well below levels in the late 1970's. Therefore, the percent of ending stocks-to-use in export nations is declining in 1986 to the lowest level in three years. Even though the level of global ending stocks-to-use remains high, stocks are declining.

Cotton Marketing Loan Expands Exports

Export sales commitments only three months into the 1986 marketing year stood at 5.0 million bales. Clearly, the marketing loan, with a 40 cent per pound drop in U.S. cotton prices on August 1, triggered the tremendous volume of sales. The surge in export sales is largely to U.S. foreign customers of long standing.

Japan has already purchased more than twice the amount of U.S. cotton than they did in 1985 and about 85 percent of the average purchases of the past five seasons. They usually buy about 50 percent of their 3.0 million or so bales of cotton from the U.S. Japan is expected to continue to follow their practice of spreading out purchases from several exporting countries.

Total purchases by South Korea are close to 80 percent of expected U.S. volume. Taiwan purchases are at the highest level of U.S. purchases in recent times.

The high level of early U.S. exports indicates many of the key input markets will turn to the U.S. to buy cotton under competitive price conditions. The procedures for purchasing, delivering, settlement of contracts, and quality of American cotton are well known and accepted by foreign customers.

The marketing loan began with record supplies and a very weak market. Several years of increasing foreign production, a very strong dollar and large textile imports set the stage for market forces to drive prices to a low level. Low prices have stimulated worldwide cotton consumption. How state and centrally-planned governments react to the price changes, and how fast, for adjustments in production is difficult to anticipate.

The U.S. program of target prices will maintain a strong incentive to push for high yields on acreage planted. Therefore, a fairly high level of production and exportable supplies from the U.S. can be expected.

Concluding Remarks

A review of cotton consumption and production patterns around the world indicates that the U.S. cotton grower can compete in international trade. However, to do so the U.S. cotton program needs to maintain provisions that, when needed, will meet headon production and export incentives of competing state and centrally-planned countries. The negative interaction of macroeconomic policies that lead to a strong dollar need to be considered when designing and implementing farm program provisions.

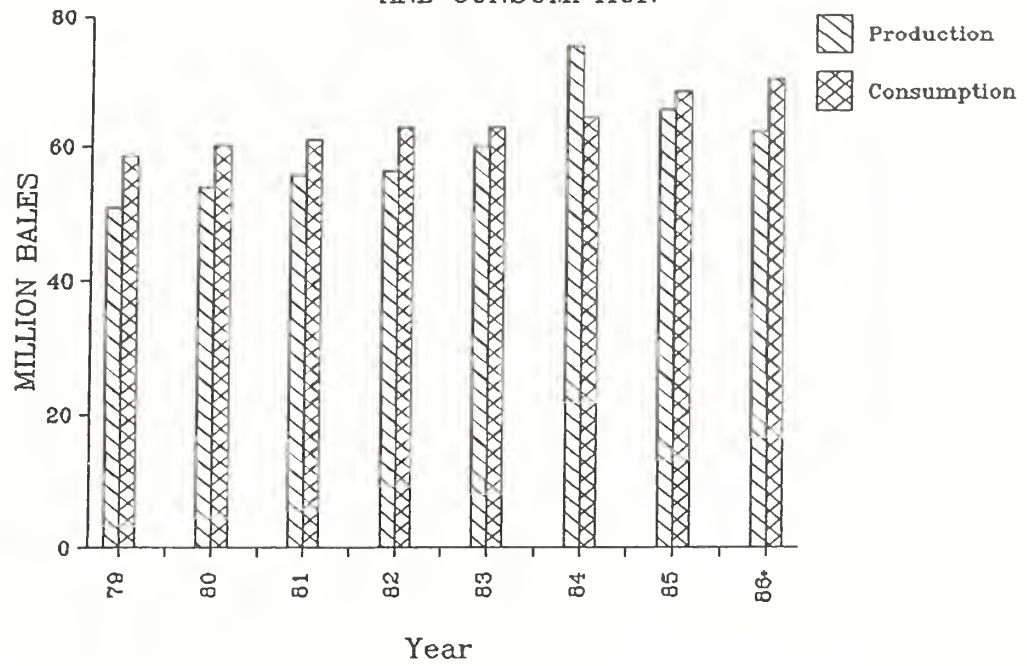
At the beginning of the 1986 marketing year under the cotton marketing loan, indications suggest U.S. sales will be large. The sales partly result from purchases delayed from 1985. For the longer run, however, a competitive price opens the door for maintaining markets. But it does not assure that the U.S. cotton industry can fully compete in the world market dominated by state trading countries. The level of exports depends largely on the relative costs of production and marketing, level of U.S. government support, and each exporting country's desire to maintain and subsidize their agricultural industry in order to generate trade dollars.

The marketing loan removes the U.S. price umbrella over world markets, yet it provides a safety net on farm income. Further, the level of supply management is reduced, though not eliminated. Smaller carryover and government stocks are possible. The total economy benefits from the economic activity associated with a larger sized agricultural industry. And, a more highly productive U.S. agriculture results. Too, the marketplace will signal foreign competitors to share in adjusting production levels.

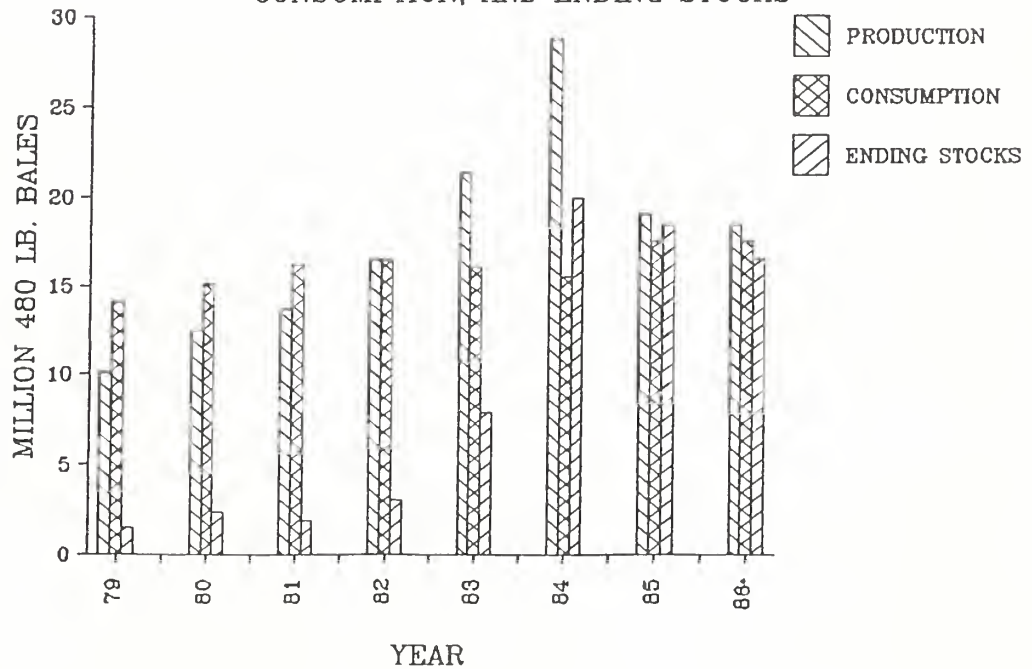
In the international trade arena, the marketing loan impact has some limitations. American farm exports compete largely against foreign governments that historically have been willing to subsidize their producers and exports. As a result, foreign agricultural production trends are up. Farmers in the U.S. must rely on highly productive operations to compete against low cost foreign labor with rapidly improving technology.

The need to develop strong trade policies and trade agreements remains central to maintaining and expanding exports. The relative strength of the dollar compared with currencies of other trading countries is also extremely important to the flow of trade. For cotton to compete with foreign production a balanced program of macroeconomic policy, coordinated trade policies and a market-sensitive but flexible farm policy need to be packaged, supported and implemented.

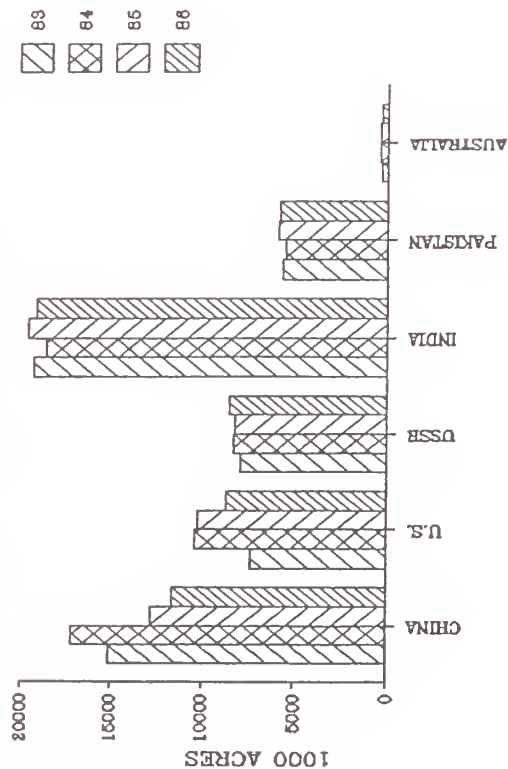
FOREIGN COTTON PRODUCTION AND CONSUMPTION



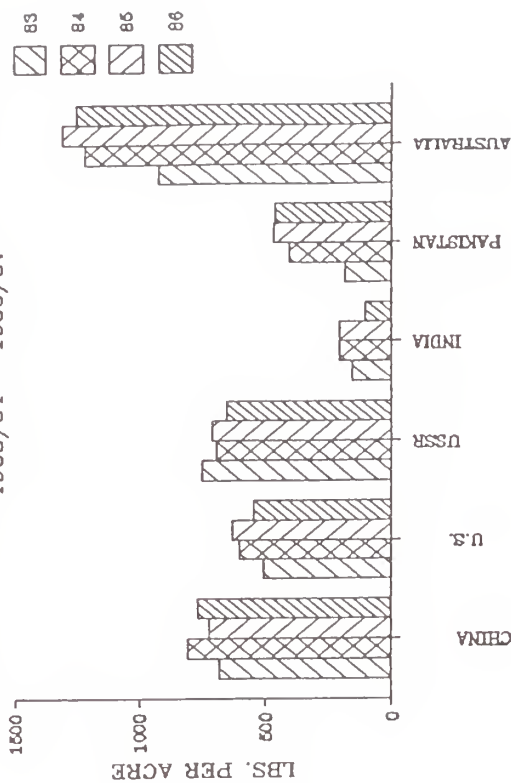
CHINA (PRC), COTTON PRODUCTION, CONSUMPTION, AND ENDING STOCKS



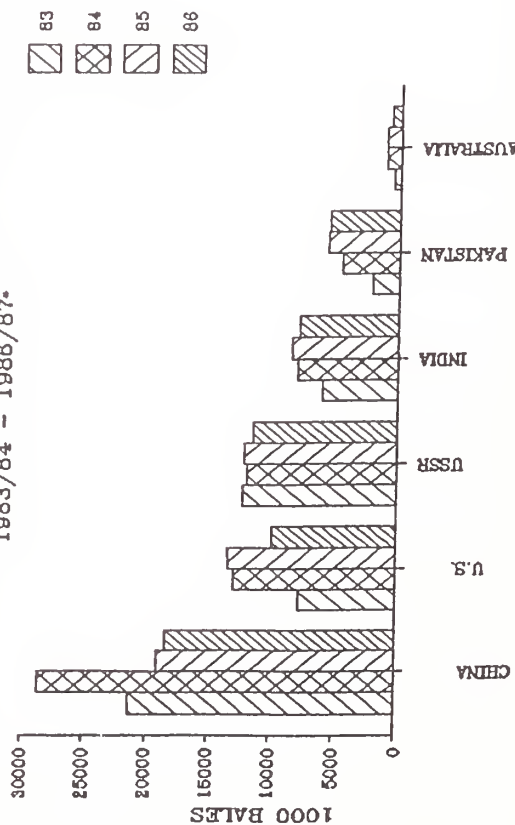
COTTON AREA BY SELECTED COUNTRIES
1983/84 - 1986/87-



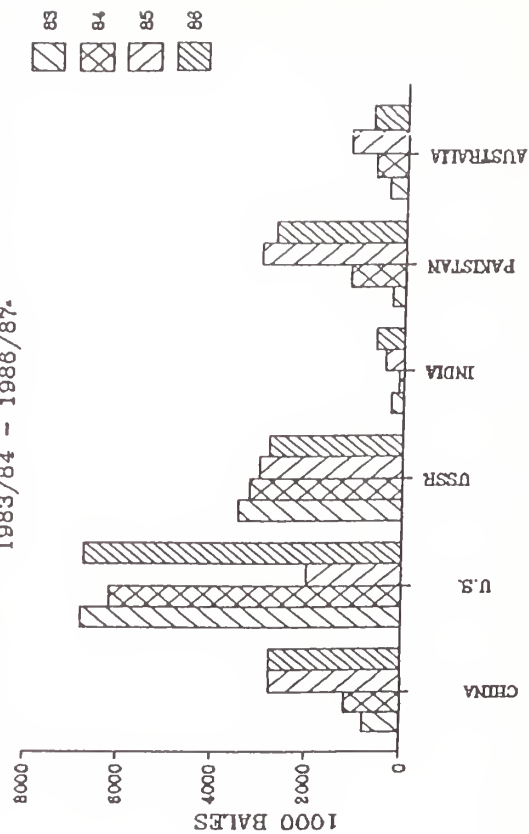
COTTON YIELD BY SELECTED COUNTRIES
1983/84 - 1986/87-



COTTON PRODUCTION BY SELECTED COUNTRIES
1983/84 - 1986/87-



COTTON EXPORTS BY SELECTED COUNTRIES
1983/84 - 1986/87-



COTTON: "A" INDEX WITH SELECTED RATIOS FOR EXPORT NATIONS, FOREIGN COUNTRIES
U.S., IMPORT NATIONS AND WORLD, 1986/87-1976/77

Crop Year	"A" Index Cents/Lb.	Export Nations		Foreign		Foreign-PRC		U.S.		Import Nations		U.S.		Foreign		World
		Ending Stocks to Use	Production to Use	Ending Stocks to Use	Ending Stocks to Use	Ending Stocks to Use	Ending Stocks to Use	Ending Stocks to Use	Ending Stocks to Use	Ending Stocks to Use	Ending Stocks to Use	Exports to Total Exports	Exports to Total Exports	Production to Use	Production to Use	
1986*		0.694	1.300	0.548	0.553			0.410	0.276			0.298	0.907			0.571
1985**	48.930	0.795	1.437	0.567	0.669			1.100	0.269			0.096	0.963			0.644
1984	69.210	0.765	1.750	0.607	0.530			0.352	0.268			0.306	1.149			0.618
1983	87.610	0.402	1.359	0.354	0.361			0.215	0.271			0.353	0.949			0.368
1982	76.650	0.403	1.365	0.273	0.516			0.745	0.277			0.268	0.895			0.367
1981	73.760	0.411	1.466	0.305	0.565			0.568	0.307			0.325	0.911			0.381
1980	94.110	0.331	1.337	0.308	0.413			0.233	0.298			0.301	0.897			0.320
1979	85.580	0.462	1.823	0.346	0.462			0.193	0.288			0.406	0.870			0.358
1978	76.070	0.468	1.624	0.339	0.418			0.323	0.296			0.312	0.888			0.368
1977	65.000	0.561	1.843	0.361	0.471			0.447	0.301			0.287	0.927			0.412
1976	81.690	0.426	1.583	0.309	0.422			0.258	0.249			0.272	0.857			0.324

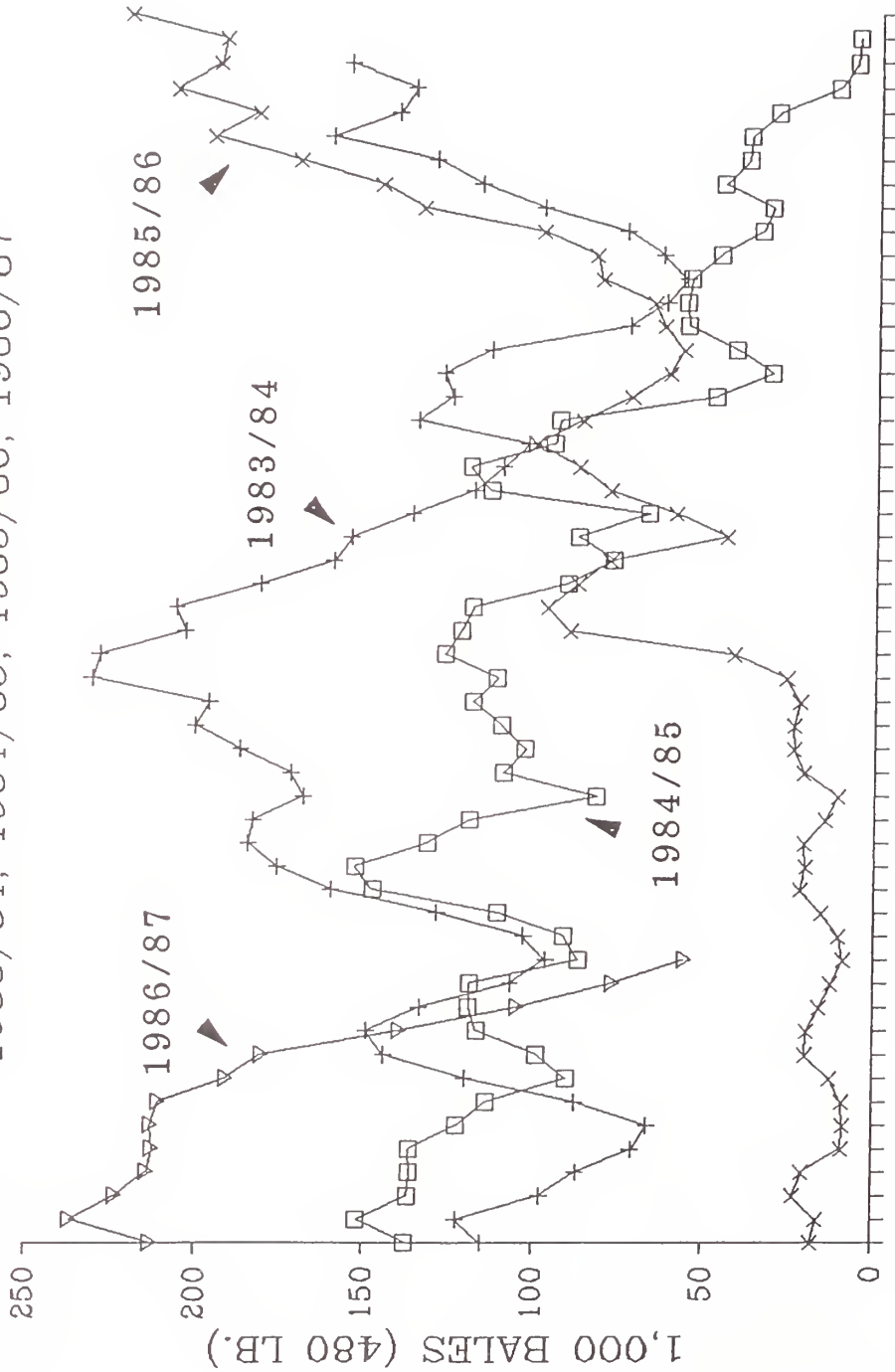
* Estimated

** Preliminary

SOURCE: Foreign Agriculture Circular, "Cotton--World Cotton Situation", USDA, FAS, Selected Issues.

COTTON SALES, 4-WEEK MOVING AVERAGE

1983/84, 1984/85, 1985/86, 1986/87



U.S. COTTON EXPORTS, SELECTED COUNTRIES AND MARKETING YEARS
(1,000 Running Bales)

Country	82/83	83/84	84/85	85/86	86/87*	Largest Purchase**	Total All Imports		
							82/83	83/84	84/85
South Korea	1219.40	1173.90	1212.20	468.90	1149.60	1219.40 (82/83)	1516.00	1602.00	1601.00
Japan	1257.00	1735.30	1480.40	529.70	1255.70	1735.30 (83/84)	3138.00	3338.00	3123.00
Taiwan	350.20	462.40	466.90	35.50	787.40	744.80 (81/82)	1044.00	1171.30	1293.00
Indonesia	234.40	342.90	252.00	97.10	227.00	342.90 (83/84)	520.00	603.00	620.00
Italy	105.90	259.90	318.10	87.20	199.40	318.10 (84/85)	1095.00	1155.00	1171.00
West Germany	111.50	169.40	153.00	32.20	152.70	169.40 (83/84)	1039.00	988.00	1069.00
Philippines	67.90	54.60	58.70	8.80	122.70	67.90 (82/83)	69.00	82.00	86.00
France	47.50	130.70	117.80	8.30	102.70	130.70 (83/84)	870.00	775.00	730.00
Portugal	41.00	67.70	93.00	8.00	67.50	93.00 (84/85)	596.00	668.00	721.00
Canada	230.80	220.10	198.10	84.90	15.80	230.80 (82/83)	245.00	248.00	225.00
Total	3665.60	4616.90	4350.20	1360.60	4080.50	5052.30	10132.00	10630.30	10639.00
Other	1199.00	1829.20	1592.80	413.90	892.60	---			
Grand Total	4864.60	6446.10	5943.00	1774.50	4973.10	---			

* Commitments

** For a Season Since 75/76

SOURCE: USDA, FAS, "U.S. Export Sales," various issues.

ANNUAL AGRICULTURAL OUTLOOK CONFERENCE

United States Department of Agriculture
Washington, D.C.



INTERNATIONAL TEXTILE TRADE: THE CONSUMER'S STAKE

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INTRODUCTION

The establishment of the General Agreement on Tariffs and Trade (GATT) in 1948 was designed to liberalize trade between countries and to increase the growth and prosperity of market-oriented economies. The GATT was successful in the 1950s and 1960s in promoting trade liberalization, particularly with respect to tariff rates. However, higher tariff rates were retained for the textile and apparel industries. In addition these industries received special treatment in 1962 when the Long-Term Arrangement on Cotton Textiles (LTA) became effective. This agreement authorized quantitative restrictions on imports of cotton textiles from particular low-cost sources, notably the developing countries, and was a major departure from the non-discrimination rules of the GATT system. The LTA was followed by a Multi-Fiber Arrangement (MFA) in 1974, which has been renewed several times. The MFA increased the scope of trade restrictions for textile products and established rules for the negotiation of quantitative restrictions on imports between developing and developed countries.

The objectives of this paper were to examine the impact of trade restrictions for textile products on consumer welfare. The first section examines consumer gains from trade including the impact of trade on domestic producers. The second part focuses on the growth of trade restrictions for textile products, with particular emphasis on quantitative restraints. The static and dynamic costs of trade restraints are examined in the third part of the paper while the fourth part provides empirical estimates of the impact of trade restraints on U.S. apparel consumers in 1980.

CONSUMER GAINS FROM TRADE

Consumer gains are based on the increase in consumption possibilities due to trade. Trade encourages countries to specialize in the production of goods and services where they have a comparative advantage and also means that the cost savings from such specialization are passed on to consumers. In addition trade enables consumers to purchase goods and services from an international rather than a national marketplace and to take advantage of production possibilities in different countries.

Measurement of the consumer benefits from trade is based on consumer willingness to pay for the product or consumer demand for the product. In Figure 1a the demand for the imported good is given by D_d while the world supply price (including transport costs) equals P_1 . The consumer willingness to pay for the quantity Q_1 is given by the area under the demand curve $-OCAQ_1$. Actual consumer expenditures for the quantity Q_1 are equal to OP_1AQ_1 so that consumer benefits from the purchase of Q_1 units for a price of P_1 are equal to the triangle P_1CA . This area is referred to as consumer surplus and is equivalent to the compensating variation in income if the income effect of a price change may be neglected (Currie, Murphy, and Schmitz 1971).

In Figure 1b, the domestic and imported goods are homogenous and the domestic demand and supply curves are given by D_d and S_d respectively. In the initial pre-trade situation, the domestic price and quantity are given by P_1 and Q_1 . This is the situation that will exist in a closed economy, i.e., no imports. In an open economy, the country will import goods as long as the world market price is lower than P_1 . Assuming the world supply price (including transport costs) is equal to P_2 , then the initiation of trade will result in a lowering of domestic prices from P_1 to P_2 . Domestic production will decline to Q_2 while domestic consumption will increase to Q_3 . Imports, which are equal to $Q_3 - Q_2$, account for the difference between domestic demand and supply. The gain in consumer welfare from the initiation of trade is given by P_2P_1BC . While the consumer gains from trade, the producer loses. The producer loss in the short-run is given by the area P_2P_1BA . The divergence between producer and consumer interests should be born in mind in evaluating trade regulation policies.

The dynamic gains from trade are even more significant. First, trade provides a stimulus to domestic producers to respond to changes in production technologies and to adopt the lowest cost methods of production. The U.S. steel and automobile industries are examples of industries that have adopted new production technologies from abroad due to the pressures of international competition (Bergsten 1972, U.S. International Trade Commission 1985a). Second, trade encourages process and product innovation as producers seek to maintain their competitive position on international markets. Finally, trade creates an environment in which producers are responsive to consumer needs.

TRADE RESTRICTIONS FOR TEXTILE PRODUCTS

The textile and apparel industries in developed countries are protected by both tariffs and quotas. Tariffs have remained high on textile products in spite of various tariff-cutting rounds which have reduced tariffs on manufactured goods (Smallbone 1986).

Quotas have existed since 1962 when the LTA became effective. The LTA allowed importing countries to limit their imports of cotton textiles from low-wage or developing countries. The LTA was renewed for twelve years until the expansion of textile production in developing countries and the growth of the man-made fiber industry rendered it ineffectual. Pressure from the

developed countries' textile industries to close the loophole in the LTA led to its replacement by the MFA in 1974. The new arrangement was more liberal initially than the LTA though its scope was widened to include man-made fiber and wool textiles.

The MFA was also viewed as a temporary measure and was designed to last four years. It established a framework for managing trade in textiles and apparel which would ensure the following: 1) encourage trade expansion and the gradual removal of trade restrictions, 2) increase the economic development of developing countries and their share in world textile trade and 3) provide time for industries in developed countries to adjust to international competition.

These objectives were stated in Article 1.

The basic objective shall be to achieve the expansion of trade, the reduction of barriers to such trade and the progressive liberalization of world trade in textile products, while the same time ensuring the orderly and equitable development of this trade and avoidance of disruptive effects in individual markets and on individual lines of production in both importing and exporting countries.

The MFA had two important features. First, it allowed developed countries to restrict imports from developing countries. The imposition of quotas on a selective bilateral basis is contrary to the basic GATT rules of trade where trade is conducted on a non-discriminatory, multinational basis. The second feature was that only exports from low-cost developing countries were restricted. Thus, trade between developed countries continued under normal GATT rules. According to Smallbone (1986) this resulted in trade diversion from poor to rich countries.

In spite of these characteristics, the MFA has been renewed three times since its inception in 1974 (1977, 1981 and 1986). Its renewal has been attributed to the fact that "the policy choice in the textile and apparel sector has never been a choice between GATT rules and the MFA, but between the MFA and more severe modes of national protection" (Weil, Gotshal and Manges 1985, p. 12). In addition, each extension of the MFA has allowed importing countries to impose greater restrictions than existed previously (Smallbone 1986).

The permanent nature of "temporary" arrangements such as the LTA and the MFA casts doubt on the effectiveness of such arrangements in achieving the "progressive liberalization of world trade in textile products" and in facilitating the restructuring and adjustment of import impacted industries. The negative effect of continued protection on adjustment has been noted in an OECD study (1985) which cautioned that "protection itself becomes less effective in promoting adjustment when - as a result of repeated renewal of protectionist measures - the firms being protected have no reason to expect that they will ever be exposed to the full challenge of international competition (OECD 1985, p. 22).

Static Effects

Static costs and benefits are confined to the short-term effects on consumer prices and choices as well as output and employment gains in the protected industries. Tariffs increase prices directly while quotas increase prices by reducing the quantity of the good that may be imported. Price increases, in turn, will increase domestic output and employment though the latter may also be affected by industry modernization due to the pressure of international competition.

A comparison of the impact of tariffs and quotas is shown in Figure 2. The domestic demand and supply curves are given by D_d and S_d respectively while the world price is given by P_1 . In the initial situation the domestic price is P_1 with imports accounting for $Q_E - Q_A$ units and domestic production accounting for Q_A units. Imposition of a tariff shifts the world supply price from P_1 to P_2 with a resulting decline in imports equal to $Q_F - Q_B$. The loss in consumer surplus from the price increase is equal to the area P_1P_2FE . This consists of an expenditure loss, which is equal to P_1P_2FG and a consumption efficiency loss (area EFG) as some consumers who were willing to buy low-cost imports are forced out of the market due to higher prices.

Consumer losses are offset by gains in tariff revenue (area $CBFG$) and in producer surplus (area P_1P_2BA). The welfare loss from the tariff is thus equal to the two areas ABC and EFG .

Imposition of a quota limiting imports to $Q_F - Q_B$, could achieve the same price increase from P_1 to P_2 and entail similar gains and losses to producers and consumers. However, the area $CBFG$, which is called the scarcity rent, may go to either the importing or exporting country. If the importing country auctions quotas, or the importer is free to select his source of supply among exporters, then the scarcity rent will accrue to the importing country. However, if the exporter controls the allocation of the quota then the exporting country will receive the scarcity rent.

A final comparison between tariffs and quotas relates to the degree of protection provided by the trade regulation. Most authorities agree that a tariff does not provide the same degree of protection to the domestic manufacturer as a quota since a reduction in world market prices will weaken the protective effect of a tariff. In addition, the foreign manufacturer may reduce prices in order to offset the price increase from a tariff. In contrast, a quota limits the quantity of foreign goods that may be imported irrespective of price changes.

Quotas also have an indirect effect which is not shown in Figure 2. They may encourage trading-up by exporters as they seek to maximize their revenue profits from a quota system. According to Smallbone, both Hong Kong and Taiwan have encouraged their apparel industries to move into higher

value production. She noted that such developments will reduce the supply of "cheap imported clothing" since the number of new entrants, who might manufacture inexpensive clothing for exports, is restrained by the MFA (Smallbone 1986). The vulnerability of low-income consumers to import restrictions was also noted by Bergsten (1972).

Dynamic Effects

The dynamic costs include the impact of decreased competition on firms in the importing country. There is less pressure to be efficient, innovative or responsive to changes in consumer demand since protection means that domestic firms are insulated to some extent from international competition.

The continued protection of the textile and apparel industries in developed countries also affects the growth of other sectors of the economy, in particular the exporting sector. A study by a European Task Force on trade protection concluded that protection is likely to retard the transfer of resources to efficient exporting industries, which are vital to the country's future prosperity, while retaining resources in inefficient industries that need government support and government programs in order to survive (Benard et al. 1984, p. 5).

Finally the MFA limits the participation of the poorest developing countries in world trade in textiles and apparel. This is of particular concern to some analysts of textile trade policy.

What are almost certainly the most harmful consequences of textile quotas will come over the long run, therefore, in relatively poor developing countries that have the potential to expand their industrial base and manufactured exports by specialising at first in labour-intensive products such as clothing. If MFA quotas did not exist these countries would have the opportunity to follow much the same path to industrialisation that Hong Kong, South Korea and Taiwan have been taking and to supplant them as leading clothing exporters. As it is, however, quotas either discourage them from adopting suitable policies in the first place or prevent them from getting very far in textile products if they do. (Keesing and Wolf 1980, p.131.)

Similar concerns were expressed by Smallbone (1986) though she cautioned that there may be dynamic benefits from import restrictions. Such benefits would include "economies of scale which manufacturers might obtain from running their firms at a higher level of production than they were able without import restrictions; greater incentive to invest in better technologies granted by the higher profits; and the opportunity for the industry to reorganize itself into better-sized, more productive units" (Smallbone 1986, p. 158). Smallbone added that these potential benefits must be considered in relation to a "possible permanent loss of competitiveness of

the protected sector" as well as the diversion of resources to the protected sector.

IMPACT OF TARIFFS AND QUOTAS ON U.S. APPAREL CONSUMERS

The results of two studies by Dardis and Cooke (1984) and Hickok (1985) are reported here in order to show two major characteristics of import restraints. First, import restraints involve income transfers from domestic consumers to producers, whether domestic or foreign. Second, import restraints are regressive.

The cost of trade restrictions on apparel in 1980 were estimated using the following assumptions: 1) domestic and imported goods are homogenous, 2) no scarcity rent is retained by foreign suppliers, 3) a 10 percent price difference exists between domestic and imported apparel at the same distribution level, 4) the scarcity rent arising from this price difference is returned to consumers in the long-run and 5) the elasticity of domestic supply equals 0.25 while the elasticity of domestic demand equals 0.25 and 0.5.

The second assumption is based on the fact that the MFA was confined to major exporting countries and major product categories in 1980 so that 20 percent of apparel imports were not covered by the MFA. In addition, some exporting countries did not fill their quotas (U.S. International Trade Commission 1985b). Recent research by Tarr and Mokre (1984) indicates that quota premiums have been charged by some exporting countries such as Hong Kong. Neglect of this effect means that losses have been underestimated.

The fourth assumption has been the subject of considerable debate in recent years with representatives from the textile and apparel industries claiming that the consumer receives no benefits from lower cost imports since the retailer charges a higher mark-up on imported goods than on domestic goods. The major argument against the retention of the scarcity rent by retailers in the long-run is based on the market structure of retailing which is characterized by monopolistic competition and the absence of barriers to entry. Thus profits will attract entry and prevent the retention of the scarcity rent by retailers. The scarcity rent may be returned to consumers through price differences between domestic and imported apparel at retail (Cline 1978) or through the use of higher mark-ups on imported goods to offset lower mark-ups on domestic goods.

The costs of U.S. import restraints on apparel in 1980 are given in Table 1 and are expressed in 1984 dollars. Total consumer losses are approximately \$13 billion with consumer expenditure losses accounting for the major portion of such losses. Deduction of producer gains and tariff revenue from consumer losses results in a welfare loss which ranges from \$0.742 billion to \$1.160 billion depending on the price elasticity of demand. This welfare loss is relatively small reflecting the fact that consumer losses are offset by domestic producer gains. Thus, trade restraints result in income transfers from consumers to producers.

Employment gains were not included in the estimation of welfare loss since such gains are likely to be offset by losses in other sectors of the economy including the distribution and export sectors. In addition it might be argued that workers will not remain permanently unemployed if protection ceases (Mokre and Tarr 1980).

The costs of trade restraints as well as their impact on different income groups was investigated by Hickok (1985). Total consumer losses in her study ranged from \$8.5 billion to \$12 billion for price increases of 17 percent and 25 percent respectively. The tax effects, based on a 25 percent price increase, are given in Table 2. The income tax surcharge due to protection ranges from 3 percent for the highest income group to 23 percent for the lowest income group. Values for a 17 percent price increase range from 2 percent to 15 percent. These data clearly indicate the regressive nature of trade restraints and the fact that they penalize low-income consumers.

CONCLUSIONS

The preceding discussion indicates that trade restraints for textile products impose high costs on consumers and the economy. The short-term costs are higher prices paid by consumers and the reduction in consumer choice due to product upgrading. The regressive nature of trade restraints also means that low income consumers bear a disproportionate share of the cost of protecting domestic firms and workers. The dynamic or long-term costs include the lack of incentive for the protected industries to respond to changes in production and consumption and the effects of protection on other sectors of the economy.

In contrast the benefits from trade restraints may be limited. In particular trade diversion and product upgrading reduce the efficacy of trade restraints as new sources of supply and new products continue to exercise competitive pressures on the textile and apparel industries in the developed countries. Thus, the share of the developed countries in world textile exports has declined from 78 percent in 1970 to 63 percent in 1983. The corresponding figures for world apparel exports are 63 percent and 44 percent (U.S. International Trade Commission 1985b). In contrast the share of the developing countries has increased from 15 percent to 25 percent for textiles and from 21 percent to 41 percent for apparel.

Decisions concerning trade policies for the textile and apparel industries in the developed countries have also neglected the interests of other parties who are adversely affected by such policies. The major groups are: 1) exporting industries in developed countries, 2) smaller, poorer developing countries who have been late entrants on the textile scene, and 3) consumers in the developed countries.

The lack of consumer input in trade policy decisions was noted in a recent OECD study.

"Consumers and consumer representatives are often at a disadvantage in terms of influencing trade policy decisions. Consumer interests are generally more diffuse geographically and in terms of product coverage than those of domestic producers of a particular commodity. Further, having focused to date their efforts on the implementation of consumer protection laws, for lack of resources or other reasons consumer representatives may not always have been aware of the consumer impact of trade policy measures and thus may not have taken full advantage of existing possibilities to exert influence on trade policy decisions. Indeed, they may not always have been aware of the consumer impact of trade policy measures" (OECD 1986, p. 288).

This lack of awareness may explain consumer apathy in the past to trade policies which are detrimental to their interests. The challenge for consumer educators is to alert consumers and consumer representatives to the consequences of various trade policies so that they may become effective in advocating for policies which promote their interests.

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Table 1. Costs of Trade Restrictions on Apparel in 1980 (1984 dollars)

Component	Price Elasticity of Demand	
	0.25	0.50
	(Billions of dollars)	
Consumer Expenditure Loss	12.688	12.688
Reduction in Quantity Loss	0.418	0.836
Total Consumer Loss	13.106	13.524
Producer Gain	10.394	10.394
Tariff Revenue Gain	1.970	1.970
Welfare Loss	0.742	1.160

Source: Dardis, R. and K. Cooke (1984), "The Impact of Trade Restrictions on U. S. Apparel Consumers, Journal of Consumer Policy.

Table 2. Tax Effect of Trade Restrictions on Apparel in 1984

Income Range	Cost of Protection as a Percentage of Income	Federal Income Tax Rate	Income Tax Surcharge Equivalent to Cost of Protection ^a
\$7,000-\$9,350	1.56	6.90	23%
\$11,700-\$14,500	1.38	9.64	14%
\$16,400-\$18,700	1.32	11.49	11%
\$23,400-\$28,050	1.23	14.56	8%
\$35,100-\$46,800	1.15	19.93	6%
\$58,500 and over	0.94	30.70	3%

^aCost of protection as a percent of income divided by the applicable federal income tax rate.

Source: Hickok, S. (1985), "The Consumer Cost of U.S. Trade Restraints," Federal Reserve Bank of New York, Quarterly Review.

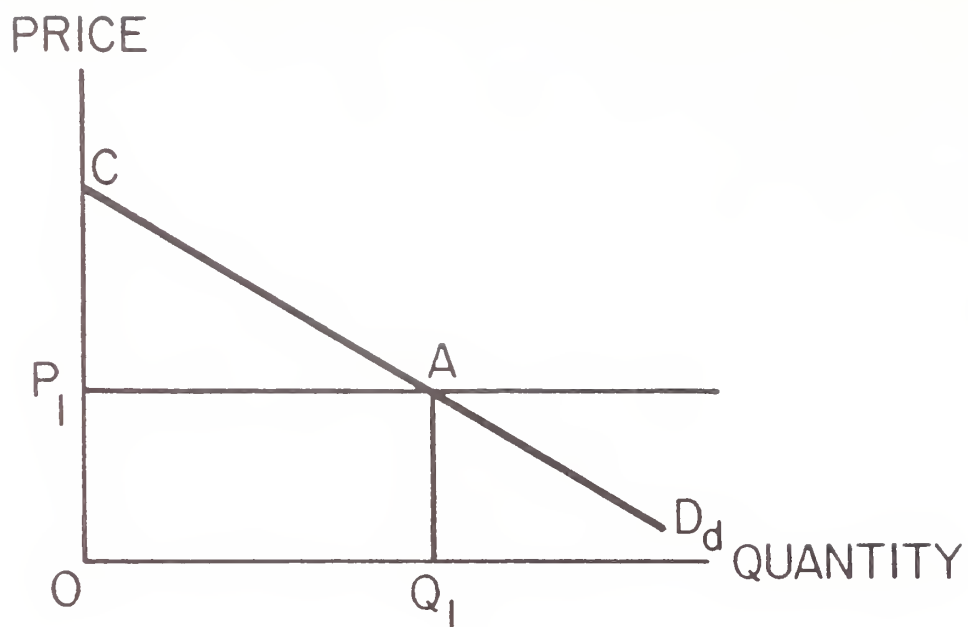


Figure 1a. Consumer Gains from Trade:
Differentiated Product

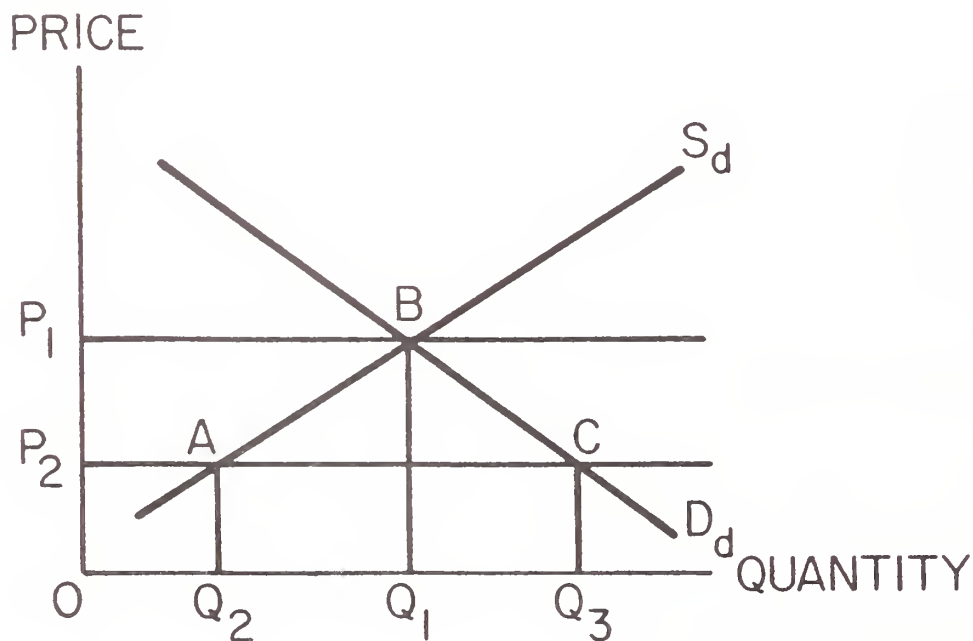


Figure 1b. Consumer Gains from
Trade: Homogenous Product

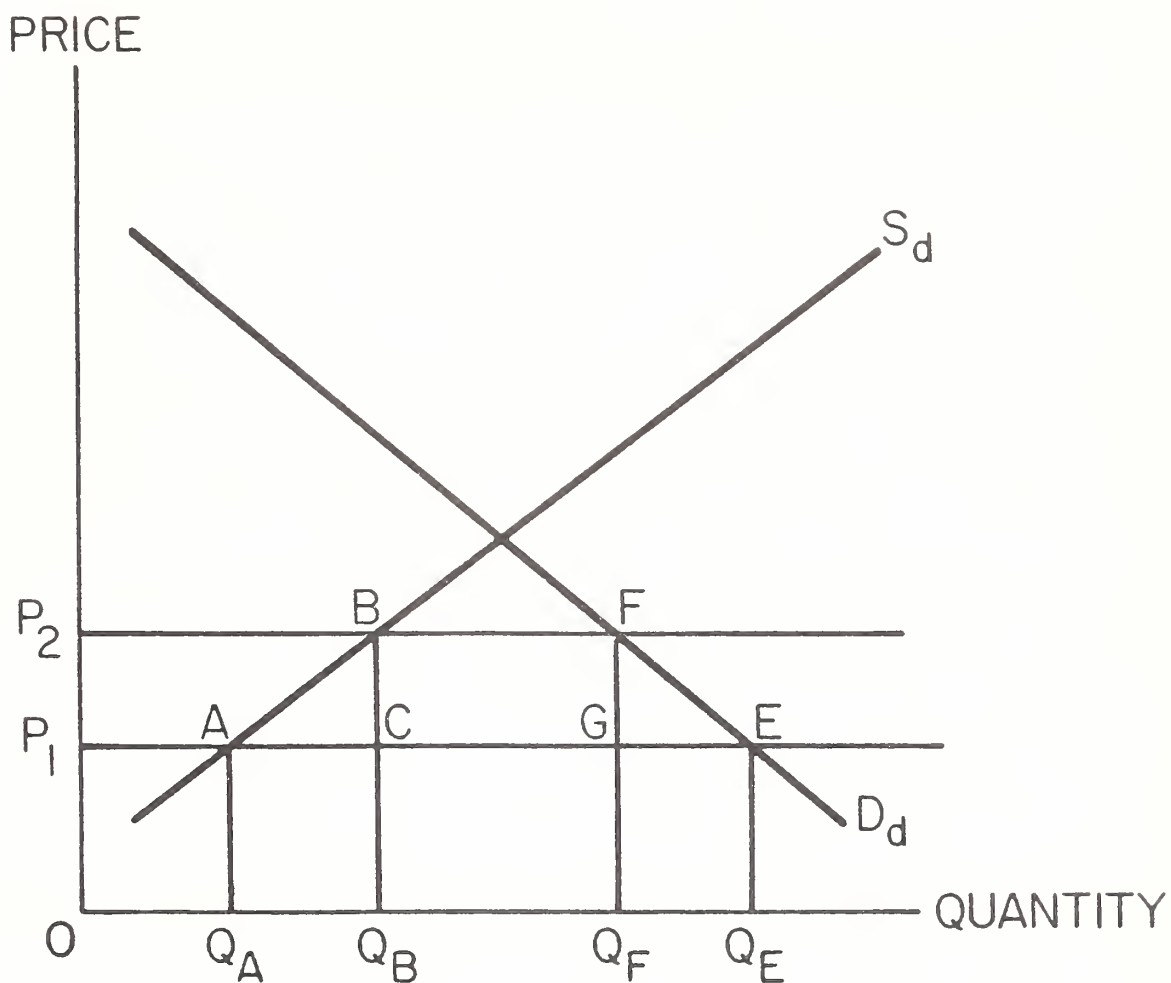


Figure 2. Welfare Loss from Tariffs or Quotas: Homogenous Product

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1987 OUTLOOK FOR VEGETABLES

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OVERVIEW

Higher Vegetable Prices in Prospect

Decreased output of commercial vegetables, potatoes, sweetpotatoes, and pulses will increase 1986 fresh vegetable prices, though prices for the storeable vegetables will be down due to high 1986 carryin stocks. Based on 1986 acreage of commercial vegetables and 1986 production of potatoes and pulses, the total 1986 output is forecast down 13 percent for the year. The 1986 commercial vegetable price index received by growers likely will be 2-percent higher than the 128 (1977=100) in 1985, primarily from increased fresh vegetable prices. The modest price increase in 1986 is likely to stimulate increased fresh vegetable plantings in the first two quarters of 1987.

Even though most of the U.S. fresh vegetable supplies come from domestic producers, foreign supplies have risen during the past decade. Most of the increase was between 1980 and 1985, and growth likely will continue as consumers' demand for fresh vegetables rises further. However, the rate of increase in imports likely will slow.

Drought in Southeast Reduced Regional Supplies

Dry, hot weather reduced summer yields of many major fresh vegetables in the southeastern United States (Alabama, Georgia, North Carolina, South Carolina, and Virginia). During June and July, the Southeast accounts for a 5-percent share of U.S. fresh vegetable supplies compared to its annual 2-percent share of the 1985 output of 218 million cwt.

The lack of rain in the Southeast shortened the region's shipping season for the 1986 summer sweet corn, tomato, and watermelon crops. Shipments of these fresh vegetables from the five southeastern States fell 27 percent from the previous year's 6.3 million cwt for the June 1 to August 2 summer shipping season.

However, overall fresh-market vegetable shipments during June 1 to August 2 were 3 percent ahead of last year, reflecting the small share of summer acreage for the Southeast and the beneficial weather in other major summer producing areas. The primary summer producing States are California, New York, and Michigan, which supplied 62 percent of the fresh vegetable shipments in the

United States during 1985. In addition, the drought contributed to the reduced output of sweetpotatoes, whose production is concentrated in the Southeast.

Consumption Trends and Outlook

Total 1985 per capita utilization of vegetables--excluding potatoes and sweetpotatoes--was 190.6 pounds, farm-weight basis, compared to 169.0 in 1975. Fresh use totaled 90.8 pounds in 1985 and was 18 percent higher than in 1975. The majority of vegetable per capita use was from fresh with 48 percent of the 1985 total. The proportion of fresh to total per capita rose 1-percent per year over the last 10 years. For 1986, fresh vegetable acreage likely will increase modestly as production likely will remain around 1985's level, though imports will be slightly lower.

Vegetables for canning per capita use has apparently lost out to fresh. The 1985 canning use was 82 pounds, farm-weight basis, compared to 85 pounds in 1975. The 2 percent per year drop in use was primarily due to consumer's unpopular attitudes about canning vegetables' nutritional value. However, the popularity of processing tomatoes increased between 1975 and 1985 and helped to soften canning vegetables overall 1 percent per year loss of total per capita share. Consumption in 1986 likely will increase due to the continued growth in the processing tomato market.

Vegetables for freezing use posted 12 percent per year gains over the past 10 years, second only to fresh use. Vegetables for freezing share of the total use was 9 percent in 1985, up from 8 percent in 1975. Increases in the dual purpose vegetables--broccoli, carrots, and cauliflower for freezing--helped to propel the vegetable for freezing growth. This growth in freezing vegetables is expected to continue as consumers' maintain their strong demand for convenience foods.

Per capita use of potatoes in 1985 totaled 125.4 pound, farm-weight basis, up from 123.4 pounds in 1975. Fresh use rose 12 percent to 52.1 pounds in 1985, as its share of total potato use rose to 42 percent from 40 percent in 1984, though this is stable with the share in 1975. Strong gains in potatoes for freezing over the past 10 years helped to offset the slight decline in fresh potato use to boost the overall total. Potatoes for freezing accounted for 30 percent of total usage in 1975 and 34 percent in 1985. The outlook for 1986 potato usage portends increases in both fresh and freezing potatoes as away-from-home usage grows.

COMMODITY OUTLOOK

Fresh Vegetable Supplies Down for 1986

Production of fresh vegetables and melons for 1986 likely will fall 2 to 3 percent below the 218 million cwt produced in 1985. Based on 1986 acreage estimates and 3-year average yields, output is expected to be between 207 and 219 million cwt. Acreage estimates for the 10 major fresh-market vegetables

(asparagus, broccoli, carrots, cauliflower, celery, sweet corn, lettuce, onions, and tomatoes) fell in each of the four seasons. Total 1986 acreage is expected to be 2 percent below the 788,360 in 1985, with 4 percent of the reductions coming during the first-half of 1986.

The 2-percent lower 1986 acreage was attributed to larger imports of fresh vegetables. Even though 95 percent of fresh supplies come from domestic sources, foreign supplies have made major gains in the last 6 years. The majority of the fresh imports come from Mexico during the winter months when U.S. supplies are concentrated in a few southern States, like Florida. Because Florida has suffered from a freeze in 4 out of the last 5 seasons, Mexico's share of the U.S. fresh vegetable market has increased, thus increasing total U.S. imports. Imports for the 10 major fresh vegetables in 1986 are expected to be 20 percent below last year's 1.5 billion pounds.

Higher 1985 supplies lowered average 1986 grower prices from a year earlier for all but the second quarter. Because Florida did not suffer from a freeze during first-quarter 1986, the average grower price index for fresh vegetables was 120 (1977=100), not the 140 (1977=100) for the comparable year earlier period. Growers responded to lower first-quarter prices by reducing spring acreage 5 percent from a year earlier.

Table 1.-- Fresh vegetables: U.S. production of the major items
in principal producing States, 1976-86 1/

Year	U.S. Production
	Million cwt
1976	176.1
1977	178.7
1978	184.4
1979	191.7
1980	190.6
1981	195.0
1982	206.5
1983	197.9
1984	217.1
1985	217.8
1986 2/	207-219

1/ Includes asparagus, broccoli, carrots, cauliflower, celery, sweet corn, lettuce, onions, tomatoes, and honeydews. 2/ Unofficial ERS estimate.

SOURCE: National Agricultural Statistics Service, USDA.

However, due to the drought in the southeast and higher lettuce prices during April and May, the grower price index rose 10-percent above the previous quarter and 27-percent above the year earlier quarter to 132. Despite the overall price increase, summer acreage--which accounted for 38 percent of all acreage in 1986--fell 1 percent. Prices of fresh vegetables tend to decline seasonally during the summer as supplies are ample, the third-quarter 1986 grower price index was down 12 percent from second quarter and 1 percent from the year earlier period.

The outlook for the fourth-quarter 1986 grower price index portends a 20 percent increase over third-quarter's 115 (1977=100), though about 2 percent less than the 140 from fourth-quarter a year earlier. Fourth-quarter prices tend to rise seasonally above third as the area for fresh-market vegetables drops to about 18 percent of annual area harvested. The 1986 season average grower price index for fresh vegetables likely will be 2-percent higher than last year's 125.9 (1977=100). Prospects are for 1987 grower prices to be 1 to 2 percent higher than 1986, as domestic supplies continue to moderate and the growth in imports slows.

1986 Contracted Processing Acreage Down

Contracted production of the four major processing vegetables (snap beans, sweet corn, green peas, and tomatoes) in 1986 fell 2-percent below the 11 million tons in 1985. The slight increase in tomato output could not offset the reduced snap beans, sweet corn, and green pea output. Total output of the three crops dropped 8 percent. Tomato processors had actually reduced acreage 3-percent, however, good weather boosted yields and raised output 2 percent to 7.3 million tons.

The 8-percent lower production of processing vegetables will translate into smaller packs for all items, except processing tomatoes. However, larger carryover stocks will boost the smaller packs to place 1987 supplies near this year's level.

Despite the reduced output of processing vegetables for 1986, increased processed vegetable prices for all of 1986 are unlikely. Prices for processing vegetables at the wholesale and retail level do not tend to fluctuate a great deal due to the stability of supplies.

For all of 1986, the retail price index for processed vegetables will average close to last year's 147.7 (1977=100). Based on prices during the first nine months of 1986, this year's retail price index for processed vegetables averaged 147.7, as compared to 147.9 for the comparable period last year.

The majority of processing supplies comes from domestic sources. However, canned and frozen imports grew 17 percent per year since 1978. Most of the processed imports were canned, which accounts for an average 75 percent of total processed imports. Despite the strong showing of canned imports, their share of total imports has fallen over the past 8 years from 75 to 73

percent. The loss of canned imports was more than offset by the increased frozen imports whose share rose from 24 to 27 percent over the past 8 years.

Based on processed import data during the first nine months of 1986, frozen imports rose 12 percent to 197 million pounds and canned imports rose 4 percent to 489 million pounds. Total 1986 processed imports likely will be 6 percent higher than last year's 843 million pounds.

Table 2.-- Processing Vegetables: U.S. production of major items in principal producing States, 1976-86 1/

Year	U.S. Production
	Million tons
1976	9.8
1977	11.3
1978	10.0
1979	11.2
1980	9.6
1981	9.2
1982	11.2
1983	10.3
1984	11.4
1985	11.1
1986	10.8

1/ Includes processing snap beans, sweet corn, green peas, and tomatoes.

SOURCE: National Agricultural Statistics Service, USDA.

Potato Production in 1986 Reduced

Total 1986 potato output was estimated to be 352 million cwt, 13 percent below last year's record 407.1 million cwt. The 1986 fall potato crop was estimated at 308 million cwt, also 13 percent less than last fall's record 354 million cwt. Low prices from the 1985 crop and high stocks lowered acreage for all four seasons, while average yields fell 3 percent to 290 cwt.

Last year's record crop boosted overall potato use 6 percent to 125 pounds per person, farm-weight basis. Fresh potato use--which accounts for 42 percent of total use--rose 12 percent in 1985 to 52 pounds, the highest level since 1978. Freezing potato use rose 2 percent in 1985 to 42 pounds, farm-weight basis, its highest level since 1977. Freezing potato use accounted for approximately 34 percent of total use, up from 32 percent in

1980. Gains in demand for freezing potatoes has outpaced that of fresh, canning, chips & shoestrings, and dehydrating, with an average annual growth rate of 2.5 percent over the past 6 years. The outlook for 1986 potato utilization portends lower total use due to the lower output. However, potatoes for freezing likely will remain strong as consumers' away-from-home food spending increases faster than at-home food spending.

Grower prices for the 1986 crop will probably average 4 to 6 percent less than the \$4.90 per cwt in 1985. The lower price in 1986 has resulted from extremely low first-half prices of \$3.87 per cwt as compared to \$5.80 during the comparable year earlier period. High carryin stocks of both fresh and processing potatoes weakened demand. Stocks were so large for fresh potatoes that for the first four months of 1986, fresh grower prices fell below processing prices received by growers. Promotional sales at the retail level during the spring and early summer helped to draw down the high frozen french fry stocks and stimulate movement in the processing supply. Growers likely will face further price strengthening in 1987 as this year's smaller crop is utilized.

1986 Sweetpotato Output Lower

Sweetpotato growers reduced harvested acreage for the 1986 crop 10 percent to 95,100 acres, the smallest on record. Output this season likely will be around 12 million cwt based on 3-year average yields. However, the drought in the Southeast during the summer likely reduced yields from last year. Sweetpotato area has trended down 1 percent per year since 1970, as use of sweetpotatoes lessened 1 percent per year over the past 15 years.

The 1985/86 pack of canned sweetpotatoes was 6.8 million cases (basis 24/303's), 4 percent larger than the previous pack. Shipments of canned sweetpotatoes for the 1985/86 season were 4.8 million cases, 7 percent below a year earlier as processors faced 50 percent larger carryin stocks. As demand weakens for canned sweetpotatoes and grower returns' dwindle, the 1986/87 pack likely will be reduced.

Mushroom Sales for 1985/86 Down

Larger U.S. mushroom imports, particularly canned mushrooms, during the 1985/86 season helped to reduce processing sales 8 percent to 161 million pounds. While fresh sales rose 2 percent to 427 million pounds, they could not offset lower processing sales with total sales off 1 percent. Mounting import pressure lowered processor prices 4 percent to 54.9 cents per pound. Fresh prices rose 1 percent to 94.8 cents per pound reflecting the strong fresh-market demand.

The United States is a net importer of canned mushrooms, and imports rose 14 percent in 1985/86 to 137 million pounds, drained weight. The two major exporting countries are Taiwan and China, which supplied 62 percent of the total U.S. canned mushroom imports this season. However, Hong Kong's canned

mushroom exports to the United States more than doubled to 42.1 million pounds--pushing Hong Kong's share of the U.S. canned mushroom market to above one quarter. Imports of canned mushrooms for the 1986/87 season likely will again rise as U.S. growers reallocate mushroom output to fresh.

Dry Bean Production level with 1985

Output of dry edible beans in 1986 was estimated at 22.7 million cwt, near last year's 22.3 million cwt. However, growers planted more area this season in anticipation of continued strong export demand and favorable prices relative to alternative field crops like corn. Due to heavy rains in the midwest this past fall, yields were significantly reduced in Michigan--which is the major navy bean producing State. Growers likely will again increase acreage in 1987 as their higher output expectations were not realized and prices will continue to be favorable to other field crops.

Table 3.--Per capita utilization of vegetables (farm-weight basis)

Year	Fresh vegetables	Canning vegetables	Freezing vegetables	Fresh potatoes	Processing potatoes
Pounds					
1970	71.3	64.7	11.2	63.0	53.6
1975	74.3	81.6	13.8	54.6	68.9
1980	81.3	83.3	14.6	45.9	64.4
1984	89.8	90.4	16.8	46.6	71.3
1985	91.1	82.2	17.6	52.1	73.4

SOURCE: Economic Research Service, USDA.

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1987 OUTLOOK FOR FRUIT

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The fruit industry is in a transitional period. Citrus production in Florida and Texas is gradually recovering from the effects of recent freezes, but the threat of more freezes coupled with the discovery of citrus canker is causing growers reluctance to replant freeze-damaged acreage. Despite increased competition in the world market, the U.S. fruit trade situation has improved. This is due, in part, to the weak dollar and the increased promotional activities such as the Targeted Export Assistance (TEA) Program. There has been a gradual reduction in the production of fruit that is in oversupply and an increase in the production of undersupplied fruit to improve grower returns. There has been a shift in consumer demand for fresh fruit, but there is increased consumer concern about the health effects of fruits treated with chemicals which has affected marketings of fruits. Increased consumer diet consciousness on canned fruit and the innovation of processing technology have also affected the processing fruit industry.

During the transitional period, financial conditions for most fruit growers will remain relatively sound. According to the U.S. Department of Agriculture, 1985 cash receipts for fruit and tree nut farms totaled \$6.81 billion, up slightly from 1984. Although fruit and tree nut farms make up only 4 percent of all U.S. farms, they generated almost 6 percent of net cash farm income in 1985. Net cash income per farm was \$28,103 for fruit farms, 45 percent more than the average for all U.S. farms. Furthermore, only 1 percent of this net income per farm came from government payments in 1985, compared to 17 percent for all farms and 39 percent for cash grain farms.

GENERAL PRICE OUTLOOK

The index of grower prices for fresh and processing fruit has averaged substantially below last year so far this year. However, the October index stood at 178 (1977=100), up slightly from September, but 4 percent lower than a year ago. Prices were lower than a year ago for lemons and oranges. Overall prices are expected to fall this winter because of seasonal increases in supplies of apples and citrus. With larger citrus crops, the grower price index will probably remain below last year.

Retail prices of fresh fruit so far this year have averaged slightly above a year ago. The Consumer Price Index (CPI) for fresh fruit was 391.5 (1967=100) in September, declining 1.9 percent from August and standing at 4.2 percent above a year ago. The decrease was primarily attributed to lower prices of apples and oranges. With seasonal increases in supplies of apples

and citrus this fall, retail prices are expected to decline further. However, this season's overall smaller supplies of apples and winter pears, and stable demand, may hold prices relatively high.

Table 1.--Index of quarterly prices received by growers for fresh and processing fruit, 1983-87

Year	1st	2nd	3rd	4th	Annual average
1977=100					
1983	126	127	110	151	128
1984	142	170	255	239	202
1985	184	188	178	183	183
1986	155	160	172	161 1/	162 1/
1987 1/	147	151	159	148	151

1/ Estimated.

SOURCE: Agricultural Prices, NASS, USDA.

Retail prices of processed fruit declined in September. The BLS September index of consumer prices for processed fruit fell to 161.9 (1967=100), off 0.2 percent from August, but 4.5 percent below a year ago. Several canned fruit prices have advanced because of strong movement. Rising demand and smaller supplies will probably strengthen prices of dried fruit such as prunes and raisins. Frozen fruit prices are expected to advance because of strong demand and higher producer prices, particularly for strawberries. The recent Brazilian frozen concentrated orange juice (FCOJ) price hike has strengthened f.o.b. prices of Florida FCOJ. If demand continues strong, orange juice prices will probably remain firm. Consequently, retail prices of processed fruit will likely rise somewhat.

Table 2.--Quarterly Consumer Price Index for fresh fruit, 1983-87

Year	1st	2nd	3rd	4th	Annual average
1967=100					
1983	274	301	324	285	296
1984	295	321	355	343	329
1985	356	377	370	355	365
1986	352	375	386	358 1/	368 1/
1987 1/	353	378	385	364	370

1/ Estimated.

SOURCE: Bureau of Labor Statistics.

Table 3.-- Quarterly Consumer Price Index for processed fruit, 1983-87

Year	1st	2nd	3rd	4th	Annual average
Dec. 1977=100					
1983	151	150	151	151	151
1984	156	162	164	164	162
1985	167	169	168	168	168
1986	166	163	162	163 1/	164 1/
1987 1/	163	164	163	162	163

1/ Estimated.

SOURCE: Bureau of Labor Statistics.

FRESH CITRUS

The November forecast of 1986/87 U.S. citrus production (excluding grapefruit in California's "other areas") is 12.4 million tons, 14 percent above 1985/86 and 20 percent above the 1984/85 crop. As of November 1, larger crops were indicated for all citrus. With the lackluster economy, demand for citrus fruit will likely be stable, and larger crops are expected to weaken grower prices.

Table 4.-- U.S. citrus production, 1979/80, 1985/86, and 1986/87

Crop	1979/80	1985/86	1986/87
1,000 short tons			
Orange	11,832	7,512	8,511
Grapefruit 1/	2,986	2,188	2,399
Lemons	786	697	939
Temples	270	133	162
Tangelos	288	133	180
Tangerines	275	149	174
Total 1/	16,440	10,812	12,365

1/ Excludes California grapefruit in "other areas."

SOURCE: Crop Production, NASS, USDA.

Oranges

The forecast of 1986/87 U.S. all-orange production is 201 million boxes, 14 percent higher than last season and 27 percent above 1984/85 when the crop was hit by a severe freeze. In Florida, the forecast is 129 million boxes, 8 percent more than last season's crop. However, total Florida production is not likely to reach the 1979/80 record of 207 million boxes for several years,

reflecting the reduced bearing acreage. California's 1986/87 all-orange forecast, at 69 million boxes, is 26 percent higher than last season. The Arizona all-orange crop is expected to total 2.2 million boxes, 4 percent lower than last year. The Texas all-orange crop is expected to total 850,000 boxes, compared with 310,000 last season.

On-tree returns for oranges for all sales have so far averaged significantly below a year ago. In October, on-tree returns averaged \$4.47 a box, down 8 percent from a year ago. With seasonally increased supplies, prices are expected to fall further through early winter. However, smaller crops of apples and winter pears may reduce competition and moderate declines.

Prospects for U.S. orange exports may improve somewhat because U.S. orange prices are expected to fall from last season and the dollar has continued weak. In addition, the Japanese Government recently announced that its import quota for fresh oranges imported during its fiscal 1986/87 (April 1986-March 1987) is 115,000 metric tons, an increase of 10.6 percent from the previous season.

Grapefruit

The forecast for the 1986/87 U.S. grapefruit crop (excluding California's "other areas" grapefruit) is 58 million boxes, 9 percent more than last season. Florida's total grapefruit forecast, 50.0 million boxes, is 7 percent above 1985/86. Prospective production in California's desert areas, at 3.8 million boxes, will be 6 percent above the previous season. In contrast, Arizona growers expect to harvest 2.1 million boxes, down 12 percent from last season. The Texas crop is forecast at 2.1 million boxes, compared with 220,000 last season.

Opening prices in early October for fresh grapefruit were strong, but prices have declined with increased shipments. With the slow-growing economy, domestic demand for fresh grapefruit will likely be steady, but export prospects for fresh grapefruit are favorable. Nevertheless, larger crops of grapefruit and oranges could keep grapefruit prices below last season. Carryover stocks of most processed grapefruit products are up going into the 1986/87 season, so processor demand may not be as strong as the preceding season. In addition, grapefruit available for processing use will be small in view of strong demand for the fresh market.

Lemons

The Arizona-California lemon crop (tree crop available for harvest) for 1986/87 is expected to total 24.7 million boxes, 35 percent more than last season's small crop, but still 4 percent below 1984/85 utilized production. The California crop, estimated at 19 million boxes, is 26 percent higher than last season. In Arizona, a tree crop of 5.7 million boxes is expected, 75 percent higher than last season.

Because of the larger crop, total movement through late October was well above last year's pace. In response to increased shipments, f.o.b. prices for fresh lemons have averaged \$9.94 a carton for this season through October 25, compared with \$16.58 a year ago. F.o.b. prices are expected to remain below last year through the winter.

PROCESSED CITRUS

Florida's 1985/86 production of FCOJ totaled 132 million gallons, up 12 percent from 1984/85 because of a larger crop. Processors recovered 1.38 gallons of FCOJ per box at 42.0 degrees Brix, unchanged from last season. Imports of FCOJ into Florida and the United States as a whole have been considerably below a year ago. Even with the reduced carryin stocks, the 1985/86 supply of FCOJ is likely to be near last season, assuming imports into Florida rise during the balance of the season.

Reflecting lower prices, movement of FCOJ has been strong, reaching 200 million gallons through late October, up 7 percent from a year ago. Following a price hike for FCOJ announced by Brazilian exporters, Florida packers raised FCOJ prices from \$3.84 to \$4.08 per dozen 6-ounce cans (unadvertised brand, f.o.b. Florida canneries). This compares with \$4.60 a year ago. But volume discounts of \$0.80 per case of 6-ounce cans will remain in effect through December 31, 1986. Stocks as of late October were 22 percent below a year ago. It appears that carryover could approach to 35 to 40 million gallons, compared with 48 million last season. If demand stays up, FCOJ prices are likely to remain firm.

The larger Florida orange crop and a higher juice yield will result in increased output of FCOJ in 1986/87. The forecast for 1986/87 juice yield is 1.44 gallons a box at 42.0 degrees Brix. In addition, more Florida oranges will likely be used for juice, because of lower stocks and the availability of more California oranges for the fresh market. Nevertheless, domestic supplies will still be small because of expected smaller carryin stocks. With ample supplies of FCOJ from Brazil and strong demand, imports will likely be relatively heavy. The industry currently estimates that the 1986/87 FCOJ output will be approximately 150 million gallons.

The recent preliminary ruling by the Department of Commerce on the exportation of Brazilian FCOJ to the United States at less than fair value in violation of the anti-dumping law may affect FCOJ imports during 1986/87. The final decision on a permanent tariff is scheduled no later than March 9, 1987.

FRESH NONCITRUS

The 1986 noncitrus crop--including major tree fruits and grapes--is forecast at 11.8 million tons, down 8 percent from last season. Adverse spring weather in California caused most of the decline, which primarily reflects lower production of grapes, prunes, and plums. The apple crop is down 3 percent from 1985. The pear crop is estimated to be 5 percent smaller, with a 9-percent reduction in winter pear production. Consequently, fresh noncitrus fruit supplies will be lower this fall and early winter, and prices are likely to be higher than a year ago.

Table 5.--U.S. noncitrus fruit: Total production,
1984, 1985, and indicated 1986

Crop	1984	1985	1986
1,000 short tons			
Apples	4,166	3,975	3,869
Apricots	127	132	69
Cherries	318	276	255
Grapes	5,194	5,605	4,908
Nectarines	183	211	195
Peaches	1,330	1,074	1,139
Pears	710	747	711
Prunes/Plums	721	642	462
Total	12,749	12,662	11,608

Apples

The final forecast of the 1986 U.S. apple crop placed production at 7.74 billion pounds, down 3 percent from 1985. The forecast for the Eastern States, 2.99 billion pounds, is down 6 percent from last year, mainly because of smaller crops in New York and North Carolina. New York, the leading apple State in the East, expects a crop of 950 million pounds, off 15 percent from last year. In the Central States, crop prospects at 1.01 billion pounds are down 39 percent from 1985. The decrease is primarily in Michigan, whose crop of 650 million pounds is down 41 percent. The apple crop in the Western States is forecast at 3.74 billion pounds, up 19 percent from last year. Washington, the Nation's leading apple State, expects 2.95 billion pounds, up 44 percent from 1985's small harvest. However, reduced crops were reported for all other States in the region, with a crop of 500 million pounds from California, the second largest State in the region, off 19 percent.

Shipments of fresh apples are running well ahead of last year's pace because of an earlier harvest. Opening f.o.b. prices for fresh apples at major shipping points showed a mixed pattern. Sharply higher prices were reported in most regions, reflecting smaller crops. However, prices have declined with seasonally increased shipments. With smaller supplies of fresh apples in the Central and Eastern regions and rising demand, prices are expected to stay relatively firm through the winter. However, the larger orange crop may depress apple prices somewhat. Marketings will be affected by controversy over the use of daminozide on some apples, because several supermarket chains and processors have announced a ban on buying daminozide-treated apples. With the smaller crops from the East and Central States, apple prices for processing have been negotiated generally above last year, even though processor demand does not look favorable. Export demand will also be important to apple prices. Export prospects are likely to improve somewhat because of larger supplies of fresh apples from Washington and the weak dollar.

Grapes

The final forecast for the 1986 U.S. grape crop is 4.91 million tons, down 12 percent from last year. Prospects in California point to a crop of 4.45 million tons, compared with 5.20 million in 1985 with smaller crops expected for all types--table, wine, and raisin grapes. Consequently, the California crop accounts for 91 percent of the U.S. total this year, down from 93 percent in 1985. Reflecting primarily increased crops in New York and Washington, total grape production in States other than California is estimated at 457,500 tons, up 14 percent from 1985. The New York crop is forecast at 165,000 tons, up 13 percent. The Washington forecast at 155,000 tons, is 34 percent above 1985.

Because of a smaller crop, shipments of table grapes through mid-October were off slightly from a year earlier. In response to strong demand and seasonally reduced supplies, f.o.b. prices for fresh grapes have strengthened further. By mid-October, the f.o.b. price for Thompson Seedless was quoted at \$9.00 a 23-pound lug in the central San Joaquin Valley, compared with \$5.50 a year ago. Fresh market grape supplies will be down this season because of the smaller crop. In addition, the use of table grapes for the fresh market is not expected to rise appreciably. The market for competing uses of multipurpose varieties, particularly Thompson Seedless, will likely be strong because of larger domestic wine shipments, improved demand for raisins, and the smaller crop. Consequently, the 1986 average grower price for fresh grapes is projected to be above 1985. Because of the smaller crop and strong demand, growers and packers have agreed on a field price of \$885 a ton for Thompson Seedless grapes, compared with \$810 a year ago. The strong shipments of California wine and the smaller wine-grape crop have resulted in higher wine-grape prices.

California wine shipments to all markets have been strong. Shipments for the first 7 months of 1986 were substantially above a year earlier. In contrast, foreign wine shipments registered a 19-percent decrease from a year ago because of higher prices resulting from the weak dollar. Therefore, the strong domestic shipments have held wine prices above a year ago. The BLS Consumer Price Index for all wine during the first 9 months of this year averaged slightly above a year ago. With higher grower prices for wine grapes, and strong domestic shipments, wine prices are likely to remain above a year ago.

Pears

The final forecast for the U.S. pear crop is 710,450 tons, 5 percent less than the 1985 crop. Output of Bartlett pears in California, Oregon, and Washington is forecast at 450,000 tons, down 4 percent from last year. Production of Pacific Coast pears other than Bartletts is forecast at 220,000 tons, off 9 percent from last year. Reduced production is reported for all three States. These pears are mostly marketed fresh during the winter and spring.

Despite smaller Bartlett pear production, shipments are running moderately ahead of last year's pace. F.o.b. prices for Bartletts at shipping points have fluctuated near last year's levels. Sluggish movement of canned pears has also resulted in a lower contract price for California Bartlett pears for canning use. California growers and canners have agreed on a field price of \$177 a ton, compared with \$206 a year ago. The field price has also been settled at \$177 a ton in the Northwest.

Because of the smaller crop, opening prices of winter pears at shipping points were moderately above a year ago. F.o.b. prices for D'Anjou in Yakima Valley, Washington were quoted at \$17-18 a carton (size 80-90) during the week of October 16, compared with \$12.00 a year ago. Prices for winter pears are expected to remain firm in light of reduced supplies and less competition from apples.

PROCESSED NONCITRUS

The outlook for processed noncitrus fruit during 1986/87 is mixed. Even though the canned fruit pack is expected to be down for some items, increased stocks will still result in generally adequate supplies. Supplies of raisins will be smaller than a year ago because of a reduced output, even though the carryin stock is larger. The smaller prune crop will drop supplies below a year ago, even with a slightly larger carryin stock. The total supply of frozen fruit and berries will be less than last year. The frozen strawberry pack is likely to be near last year's levels, but the frozen cherry output is much smaller than a year ago.

Reduced crops of Clingstone peaches, cherries, and plums have resulted in less canning than last year. A trade source indicates that the unaudited pack of canned Clingstone peaches totaled 15.3 million cases (No. 24/2 1/2's), down 12 percent from last year. Because of smaller crops of Clingstone peaches, grapes, and Bartlett pears, a substantially decreased pack of canned fruit cocktail--8.9 million cases (No. 24/2 1/2's)--was also reported. The canned mixed fruit pack amounted to 1.8 million cases (No. 24/2 1/2's), down 28 percent. Packs of canned apricots and freestone peaches were reported down 67 and 25 percent from last year, respectively. Because of the smaller crop in Michigan, the leading cherry-producing State, the total pack of canned tart cherries is reported 35 percent below last year.

The smaller apple crops from the Eastern and Central States will reduce the canned apple-product pack. With generally slow movement of canned apples and applesauce, the carryover stocks are likely to be relatively high. Consequently, supplies of canned apples and applesauce may still be adequate to meet market demand. Rising demand for canned apple juice may still direct more apples for processing juice.

Prospects for canned fruit prices are mixed. Despite lower costs of Clingstone peaches and Bartletts, prices for several canned items have advanced because of strong movement. The tight supply of canned cherries should strengthen prices. Canned apple items may rise somewhat because of higher costs of fruit. Wholesale prices of canned fruit for this year have been

slightly below a year ago. The BLS September producer price index for canned fruit, at 268.8 (1967=100), was almost 3 percent below a year ago.

With the smaller California grape crop and increased use of the raisin grape crop by wineries, output of raisins this season is expected to be substantially less than last year. At present, the trade is forecasting a total of 227,000 tons, compared with 345,000 last year. Even with the smaller production, large carryin stocks in the reserve pool from the Diversion program will result in adequate supplies during 1986/87. However, with higher field prices for Thompson Seedless grapes and strong shipments, raisin prices are expected to remain firm.

Production of dried prunes, the other major dried fruit, is estimated at 95,000 tons (natural conditions), down 32 percent from 1985. With a fractionally larger carryin stock, the total supply of dried prunes for 1986/87 is estimated at 155,098 tons, down 21 percent from last year, according to the Prune Marketing Committee. Early-season shipments of dried prunes through September totaled 25,067 tons, up 13 percent from a year ago. Despite the smaller supply, opening prices for private label dried prunes are unchanged from a year ago.

The 1986 pack of frozen fruit and berries will vary this season. High grower prices increased deliveries of strawberries to freezers. Freezers in California, the leading State, received 168 million pounds through October 25, up 2 percent from a year earlier. U.S. imports of frozen strawberries from Mexico totaled 37.1 million pounds through September 14, down 9 percent from a year earlier. Deliveries of strawberries to freezers in Oregon and Washington showed slight decreases this season from last season. With a smaller crop, a total of 160.4 million pounds of tart cherries were used for freezing, compared with 206.8 million in 1985. However, larger carryin stocks result in relatively large supplies of frozen tart cherries.

As of October 1, cold storage holdings of frozen fruit and berries totaled 740 million tons, down slightly from a year ago. Substantially lower supplies were recorded for apricots, blueberries, cherries, grapes, and strawberries, which were partially offset by increased stocks of apples, blackberries, boysenberries, peaches, and red raspberries. Demand for frozen fruit and berries will likely stay relatively strong. Smaller supplies, coupled with higher costs for crops, should keep prices firm.

TREE NUTS

Supplies of most tree nuts will be smaller this season. Smaller crops are estimated for all tree nuts except pistachios. Demand is expected to remain stable in light of the slow-growing economy. Smaller supplies are expected to strengthen prices.

The 1986 California almond crop was forecast at 265 million pounds, shelled basis, 43 percent below last year and 55 percent less than the 590-million-pound record set in 1984. So far this season (July 1-September 30) domestic shipments totaled 39.4 million pounds, up 6 percent from a year ago.

Primarily reflecting reduced shipments to West Germany and the Soviet Union, exports totaled 52 million tons, 49 percent less than a year ago. West Germany, the leading customer, has purchased 43 percent less, while the Soviet Union has not bought any so far this season. Shipments to the Soviet Union are likely to fall because of higher prices and the forecast for a sharply larger filbert crop in Turkey. In contrast, shipments to Japan recorded a 42-percent increase, and Japanese demand is likely to improve further. Prices for the 1986 crop have been established at substantially higher levels than a year ago, and prices received by growers will average well above 1985.

The forecast of filberts in Oregon and Washington, at 17,300 tons (in-shell basis) in 1986, is the third largest crop on record, down 30 percent from last year's record 24,600 tons, but 29 percent above 1984. World filbert output is expected to show a substantial increase because of the larger Turkish crop. Turkey, the leading producer, expects a crop of 300,000 metric tons (in-shell basis), up 43 percent from last year's unusually small output. Italy, the second largest producer, expects to harvest 100,000 metric tons, down 23 percent from 1985, while Spain will have a 37-percent-smaller crop. Nevertheless, total world commercial production will be 11 percent above 1985. Because of the smaller crop, the opening price for U.S. filberts was quoted at 78 cents a pound in a 50-pound bag, (in-shell basis), compared with 76 cents a year ago. Filbert prices are expected to remain firm this season.

The October 1 forecast for the U.S. pecan crop places production at 216.1 million pounds, in-shell basis, 12 percent lower than last year and 7 percent below 1984. The smaller crop was mainly caused by reduced production in Alabama, New Mexico, and Texas. Georgia, the leading State, expects to harvest 85 million pounds, up 2 percent from last year's hurricane-reduced crop. Carryover stocks were moderately larger than a year ago. However, the total supply of pecans will still be smaller because of the smaller crop. Thus, pecan prices are likely to stay firm.

The 1986 California pistachio crop is forecast at a record-high 70 million pounds, in-shell basis, more than two and one-half times last year's small production, and 11 percent higher than the previous record in 1984. The increase is partially caused by the alternate bearing characteristics. However, the expansion in pistachio production also reflects a steady upward trend in bearing acreage. Imports of pistachios, in-shell basis, totaled 12,790 metric tons during 1985/86, up 35 percent from the preceding season. Almost 87 percent of the total imports were from Iran. However, imports of pistachios from Iran will decline in 1986/87 because the U.S. Department of Commerce has announced 317.89-percent (roasted) and 283.8-percent (raw) duties on imported Iranian pistachios effective August 21. Under the order, the International Trade Commission has directed Customs to continue to suspend liquidation of all entries, and to require a cash deposit in the amount of the bounties effective October 7. Opening prices for the 1986 pistachio crop were about 15 percent below a year ago. The lower prices, combined with smaller crops of the other tree nuts, are expected to strengthen demand for pistachios during 1986/87.

The forecast for California walnuts is 190,000 tons, in-shell basis, 13 percent below last year's production. With a smaller crop and reduced carryin stocks, the 1986/87 supply of walnuts will be much smaller than last season. Because of the smaller supply, California packers are offering "Light Half and Pieces" walnuts at prices about 15 percent above a year earlier. Domestic demand may remain steady because of higher prices and the slow-growing economy. Prospects for export shipments are favorable because of the weak dollar and the reduction of the 30-percent duty on U.S. walnuts exported to Europe to 8 percent.

PER CAPITA FRUIT CONSUMPTION

Per capita fruit consumption in 1985 is estimated at 210.5 pounds, up 10 pounds or 7 percent from 1984. However, the 1985 per capita consumption reflects the discontinuation of data on several fruit items. The new consumption series deleted 18 fruit items. Consequently, the new per capita fruit consumption numbers are smaller than the old consumption series. For example, the 1981 per capita fruit consumption was 222.7 pounds (fresh-weight equivalent), but the new series which exclude 18 items, places 1981 consumption at 192.8 pounds. The gain in 1985 per capita fruit consumption is primarily attributed to increased consumption of bananas and FCOJ. Even though the new per capita fruit consumption numbers are smaller, they still show a historical trend.

Per capita consumption of fresh fruit gained slightly in 1985 as increases in noncitrus fruit consumption more than offset decreases in citrus consumption. Per capita fresh noncitrus consumption totaled 68.8 pounds, compared with 66.7 pounds in 1984 due primarily to an increase of 3.5 pounds of bananas. Substantially higher prices of apples and oranges contributed to the increased consumption of bananas. Per capita fresh citrus consumption amounted to 22.5 pounds, down from 23.9 pounds in 1984, reflecting higher prices. Looking ahead, fresh fruit consumption is expected to rise because of increased imports, consumer diet consciousness, and the added expense for canned fruit.

Per capita consumption of processed fruit (fresh-weight equivalent) rose from 105.9 pounds in 1984 to 119.3 in 1985 as increased processed citrus consumption more than offset decreased processed noncitrus consumption. Processed citrus consumption rose from 79.2 pounds in 1984 to 92.9 pounds in 1985. Most of the increase was attributed to FCOJ, jumping from 9.51 to 11.31 pounds. Orange juice consumption is expected to rise in the years ahead because prices are likely to be steady and more orange juice will be available, through either imports or domestic sources. Per capita consumption of processed noncitrus fruit fell from 26.7 pounds in 1984 to 26.4 pounds in 1985. Canned fruit consumption continued the downward trend while frozen and dried fruit gained slightly. The decreased canned fruit consumption can be traced to several factors. Consumers are now more health and nutrition conscious and demand less sugar in any kind of food. Thus, sales of canned fruit traditionally packed in heavy syrup have declined. The increased consumer expenditures on food away from home also reduced the opportunity to consume canned fruit. Furthermore, prices of canned fruit are generally higher

than fresh fruit. Limited advertisement and promotion to attract consumers to consume more canned fruit probably is also one of the important factors.

Per capita fruit consumption in 1986 is projected at 213.6 pounds (fresh weight equivalent), 3 pounds or 1.4 percent above 1985. The increase will likely be attributed to continued increase in FCOJ consumption because of lower prices. Per capita fresh consumption is estimated to rise slightly due entirely to increases in citrus, while fresh noncitrus consumption is likely to fall slightly due primarily to decreases in plums, grapes, sweet cherries, and nectarines. Per capita consumption of canned, chilled, and dried fruit is expected to remain relatively steady.

Table 6.--Per capita fruit consumption, 1982-86

	Total	Fresh	Canned	Chilled	Frozen	Dried
	Pounds, fresh weight equivalent					
1982	199.2	86.7	21.5	7.1	73.5	10.4
1983	209.9	91.6	19.0	8.4	80.2	10.6
1984	196.5	90.6	18.1	7.5	69.5	10.9
1985	210.6	91.3	16.2	6.5	85.5	11.1
1986	213.6	92.5	16.0	6.5	88.0	10.8

SOURCE: Economic Research Service, USDA.

In conclusion, the fruit industry is expected to continue undergoing many changes. Fruit production will be characterized by fewer farms. With continued development of new varieties and increased bearing acreage for several fruits, total fruit production in the long run is expected to increase more than population growth. Citrus production is expected to continue recovering, but will take several years to reach the record 16.5 million tons in 1979/80. The rate of increase in noncitrus production is most likely to be in some selected fruits.

Demand for fruit will rise in the years ahead due mainly to population growth and continued increases in disposable personal income. Competition will remain keen in the world market. The foreign market potential is likely to be favorable with the cooperative promotional effort and trade bargains. The potential markets will likely be in the Far East which is showing continued signs of growth. Consumers are constantly seeking new fruit items, such as tropical and sub-tropical fruits and fruit juice. To meet domestic demand, imports are likely to remain large. Producers, processors, and agribusiness all are facing the challenges to the future direction of the fruit industry.

ANNUAL AGRICULTURAL OUTLOOK CONFERENCE

United States Department of Agriculture
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International Marketing Issues for Fruits and Vegetables

By

Richard B. Schroeter

International marketing issues is a rather broad topic for fruits and vegetables. I am going to narrow the focus somewhat by concentrating on two major subjects: market access problems for U.S. fruit and vegetable exports; and, promotional programs currently being undertaken by USDA to help U.S. fruit and vegetable industries counter or offset the adverse effects of these access problems.

Market access is a highly important issue for the fruit and vegetable industry. There is no doubt that the export performance of the U.S. fruit and vegetable industry would be significantly improved if world markets were more open. Much of Latin America, Africa, the Indian continent and even parts of the Pacific Rim region are essentially off limits to U.S. products. There are a number of reasons for this development, including lack of consumer purchasing power, traditional trade links, and competition. Government trade and plant quarantine policies, however, have also played a significant role.

Some of the trade restrictions in developing countries may be understandable from an economic viewpoint. But there has been a definite tendency, as their economies improve, for the import restrictions to stay in place to protect infant industries or domestic producers. These restrictions are often on so-called luxury products and it is usually the case that fruits and vegetables are classified as such products.

Korea is one of the most extreme examples of countries that use import restrictions, once imposed for balance of payments reasons, to protect domestic production. Korea is today a country of 43 million people, a per capita GNP of \$2,000 (which is higher than Malaysia, for example), a real growth rate of over 7 percent which is indicative of a rapidly developing economy. Yet we can count on the fingers of two hands the number of fruits and vegetables of trade importance to the United States that are allowed entry. These products basically are fresh lemons, grapefruit and cherries, raisins, prunes and almonds. Products like avocados or papayas which are not even produced in Korea face an import ban. Frozen french fried potatoes, once a promising export item because of the introduction of fast food franchises in Korea, now are limited by a 150 ton import quota. The objective is simply to protect an infant potato industry in Korea.

Even the so-called liberalized products continue to face import difficulties. For example, Korea unreasonably maintains that the United States is infested with the Mediterranean fruit fly. Therefore, fresh lemons and grapefruit entering Korea must undergo two-week cold treatment on arrival, raising import costs and adversely affecting quality. Also, there have been some cases of harassment where Korean importers have been encouraged not to import U.S. products.

Taiwan is a more open market but access problems abound. The main problem is the high tariff structure. Fresh apples, for example, face an import duty of 65 percent. Fresh pears face a comparable rate. Taiwan has recently lifted an import ban on pears which opens up a new marketing opportunity. However, the high duty will restrain trade.

Although considerable progress has been made in relaxing Japan's trade barriers, problems remain. Import quotas still exist on fresh oranges and orange juice. A July 1 entry date has prevented the marketing of California cherries which are shipped primarily in May and June. We hope, however, to be able to make an announcement of a change in this situation soon.

Japan is our leading overseas market, purchasing over \$520 million worth of U.S. fruits and vegetables in the first 10 months of 1986. The exchange rate shift, with the Japanese yen declining in value against the U.S. dollar has undoubtedly been a very positive factor. Strong promotional efforts by U.S. industries and reduced trade barriers have also been important.

Some of the more difficult access problems in Japan involve plant quarantine regulations. Here again, progress is being made, as evidenced by the decision this year to allow the entry of inshell walnuts provided they are fumigated. Imports of products like apples, plums and nectarines remain banned because of the existence of the codling moth in the United States. This insect presumably is not present in Japan. In the case of apples, research is underway at the ARS facility in Yakima, Washington, in a search for a treatment that would provide quarantine security to Japan. This research is currently concentrating on a combination of cold treatment and fumigation. Large scale tests will be initiated soon. We are hopeful, of course, that these tests will yield results that will eventually enable U.S. apples to enter Japan.

In addition to these access problems, U.S. fruits and vegetables encounter subsidized competition in world markets. The European Community, for example, subsidizes exports of apples to Scandinavia, the Middle East, Africa, South America and some Pacific Rim countries as well. Subsidy rates generally are left unchanged from year to year, regardless of the size of the European or world apple harvest. Subsidies also apply to fresh citrus, table grapes, almonds, as well as other products. Processors of peaches, pears, tomatoes and prunes receive processing subsidies which are linked to high grower prices. Moreover, aids are available to farmers at the production level. For example, in parts of Italy, kiwifruit growers receive grants covering 35 percent of the start up cost of new plantings, and low interest loans for permanent structures such as irrigation systems. Partly as a result of these inducements, kiwifruit acreage has more than doubled in Italy over the past three years.

I could talk for a much longer time on the trade problems facing U.S. fruit and vegetable exports, but it should be clear from what has been said so far on the marketing problems involved in export. One of the functions of FAS is to try to help resolve this myriad of problems.

This past year we were given a new tool to use, not to resolve trade policy issues but to help U.S. industries offset the adverse impact of foreign trade restrictions. This tool is the targeted export assistance (TEA) program, authorized in the Farm Security Act of 1985. Section 1124 of that act specifies that USDA shall use \$110 million in cash or commodities each year from 1986 to 1988 on export activities to help U.S. agriculture counter or offset the adverse impact of unfair trade practices such as export subsidies or import quotas. This sum is scheduled to increase to \$325 million in 1989 and 1990.

This program is being administered in such a way that TEA resources can only be used for export promotional efforts directed at market expansion and not for price subsidies. Payments are made not in cash but with generic marketing certificates. These certificates entitle the holder to obtain the dollar amount specified on the certificate in agricultural commodities held by the Commodity Credit Corporation. The certificates are transferable. Fruit and vegetable growers receiving these certificates, therefore, have sold them to grain companies, for example, to obtain cash. The certificates could conceivably be sold at discounts or premiums but so far have been selling at premiums.

The TEA legislation, in addition to specifying the use of the \$110 million, provides that priority consideration in the allocation of the resources is to be given to industries that have pursued a Section 301 action (unfair trade practice complaint) through the U.S. government, or have been adversely affected by a retaliatory trade action related to a Section 301 action. In the fruit and vegetable sector, the priority products are: canned peaches and fruit cocktail, which through a Section 301 complaint and a subsequent favorable decision by the GATT, achieved a limitation of the EC's processing subsidy for canned peaches; California, Arizona, Florida, and Texas citrus which had an unfair trade complaint against the EC's preferential tariffs; raisins, with a complaint on the EC's subsidy system for Greece; and walnuts, which in 1985 were affected by a retaliatory duty in the European Community. All of the \$110 million available for fiscal year 1986 was allocated by October 1. Of this total, about 40 percent, or \$44,850,000, went to fruit and vegetable industries. The main reason for this sizable allocation to fruits and vegetables was that most priority products were fruits and vegetables. The priority product allocation was as follows: canned peaches and fruit cocktail, \$2.5 million (This has been raised to 5.6 million for FY87); walnuts, \$9 million; raisins, \$6.3 million; California/Arizona citrus, \$8.5 million; and Florida citrus, \$4.6 million for a total priority product allocation of \$30.9 million.

For non-priority products, we announced programs, based on requests from these groups, for California wine, dried prunes, Washington State apples, Western pears, California table grapes, California almonds and pistachios.

The main objective of these programs generally is, through media advertising, public relations activities and promotional efforts like instore displays, to expand export markets through enhancing trade and consumer awareness of the availability, quality and potential uses of U.S. products. In other words, to create a consumer franchise for U.S. products.

We have two types of TEA programs. In one we contract with nonprofit commodity organizations such as the Cling Peach Advisory Board. In the other we contract with individual firms to support branded promotions overseas. Most of our programs are with commodity organizations. The only exceptions are the California/Arizona citrus program and California almond program.

Program participants must pay all program administrative costs such as salaries and office costs. An additional contribution is also expected. At this point we require that participants contribute resources at least equivalent to 35 percent of the amount of TEA funds.

This TEA program provides what can be referred to as "impact" funds. It allows commodity organizations to enter a market to carry out dynamic, aggressive promotional programs. It is still too early to say how well it will work. All groups are being asked to include evaluations by outside experts in their marketing plans. But for the most part, the programs have been in place for only a few months or are just beginning.

We do have, however, one very impressive result and that is for canned peaches. This was the first program off the ground, having been approved last March. The bulk of the program is in Japan to help the industry offset the loss of the European market and to counter subsidized Greek competition in Japan. Until the program began, sales to Japan were declining sharply, largely because of the recent influx of cheap Greek peaches. The TEA program has turned this situation around, thanks to the efforts of the Cling Peach board and individual packers. Generic television commercials were initiated, which included tags giving the names of Japanese chain stores cooperating in the program. Extensive instore displays were launched. The industry financed special price discounts, although U.S. prices were still above Greek offers.

The result? In the first eight months of this year, exports of peaches and cocktail to Japan were valued at almost \$8 million, over four times the value of the previous year and far exceeding shipments during all of 1985.

Other products for which it appears at this time that the program will be very successful are frozen french fried potatoes, where sales to Japan are up by one-third, and table wine in Japan, with exports up over 80 percent. In the case of french fried potatoes, the \$2 million program, primarily in Japan, has resulted in fast food franchises, which are the main purchasers of the U.S. potato, cooperating for the first time on identifying their french fries as a U.S. product.

The TEA program offers some exciting promotional opportunities for the U.S. fruit and vegetable industry. But it should not detract us from the one major objective which can have the greatest impact on U.S. exports, and that is better access to world markets.

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IMPLEMENTING CONSERVATION COMPLIANCE

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Introduction

The Food Security Act of 1985 contains three conservation provisions that bring more consistency to USDA farm and conservation programs. These are the Highly Erodible Land Conservation, Conservation Reserve Program, and Wetland Conservation provisions. These provisions will reduce soil erosion and associated off-site effects, encourage conservation of natural wetlands, and promote a more productive and competitive agriculture.

Because conditions favorable to bringing large amounts of new land into production are not likely to occur in the immediate future farmers are unlikely to invest more money to improve such lands. Farmers who already have the facilities, equipment, and other inputs to continue cultivating highly erodible land are faced with a different set of decisions. This paper focuses only on the effects of conservation compliance, which ties eligibility for certain USDA farm programs to erosion control on existing cropland.

The Conservation Provisions

Conservation Reserve Program (CRP). Under CRP, USDA may contract with farmers to take up to 45 million acres of highly erodible cropland out of production and place it in permanent plant cover for 10 years. About 9 million acres of this land, eroding at an average annual rate of nearly 29 tons per acre per year, have already been enrolled in CRP. In return for removing this highly erodible land from production farmers will receive an annual payment for the contract life to maintain the permanent cover.

Highly Erodible Land Conservation. The Highly Erodible Land Conservation provision is designed to encourage producers to use an approved conservation system if they produce an agricultural commodity on highly erodible land. Highly erodible land is defined in terms of an erodibility index (EI). This index considers soil characteristics, slope, length, and climate in predicting erosion potential. Any soil with an EI of 8 or more--that is, the soil has potential to erode at eight or more times the rate considered allowable--is considered highly erodible. The index represents state-of-the-art technology and its use provides for efficient delivery of USDA program assistance as well as equity among producers.

The highly erodible land provision has two components: sodbuster and conservation compliance. The "sodbuster" component applies to land newly cultivated for the production of an agricultural commodity after December 23, 1985. Specifically affected are highly erodible fields that were not planted to an agricultural commodity between December 31, 1980, and December 23, 1985. Approximately 225 million acres of nonfederal land that is highly erodible has potential for conversion to cropland and is subject to sodbuster provisions. Producers who want to retain eligibility for certain USDA program benefits must use an approved conservation system in the production of agricultural commodities on these lands.

Conservation Compliance. Conservation compliance applies to highly erodible land used to produce an agricultural commodity between December 31, 1980, and December 23, 1985. Some 118 million acres--over one-fourth of the Nation's 421 million acres of existing cropland--are highly erodible land subject to conservation compliance. Individuals already producing an agricultural commodity on existing cropland that is highly erodible must develop and implement an approved conservation plan on such land to maintain eligibility for certain USDA program benefits.

Conservation plans include specific, practical conservation measures that will allow farmers to continue producing crops on highly erodible land while keeping soil erosion to acceptable levels. Estimates are that about 80 percent of all farmers producing on highly erodible land will want to maintain eligibility for USDA program benefits. These individuals will need a conservation plan. The plan must be developed by January 1, 1990 and implemented no later than January 1, 1995.

Figure 1 indicates that about 34.6 million acres of highly erodible cropland are eroding at less than allowable erosion rates. Obviously, these lands will be certified as being in conservation compliance. In Figure 2, we see that significant acreage of commodity program crops are grown on highly erodible land.

Wetland Conservation. The wetland conservation provision, commonly known as "swampbuster" denies eligibility for certain USDA program benefits to individuals who, after December 23, 1985, convert wetlands for the production of agricultural commodities. About 5.1 million acres of the Nation's 76 million acres of wetlands have medium to high potential to be converted to cropland.

Program Benefits Covered

Program benefits covered by the highly erodible land and wetland conservation provisions include USDA price and income supports, disaster payments, crop insurance, Farmers Home Administration loans, Commodity Credit Corporation storage payments, farm storage facility loans, and payments made under CRP.

Effects of Conservation Compliance

Costs of Implementing Conservation Plans. The cost of implementing a conservation plan on highly erodible land depends on the potential erodibility of the soil, the current level of erosion, and the degree of erosion reduction. Of the 118 million acres of highly erodible land subject to conservation

compliance, about 83 million acres will need additional treatment to meet conservation compliance requirements. (Refer to figure 3). A farmer has three choices on these acres: (1) develop and apply an approved conservation plan and retain eligibility for USDA program benefits, (2) enter the land into CRP, or (3) continue to farm without an approved conservation plan and lose eligibility for certain USDA program benefits.

Of the 83 million acres requiring additional treatment it is assumed that 45 million acres of the most difficult to treat will be enrolled in CRP. Costs to control erosion on these lands will be at least partly offset by savings as a result of reduced Commodity Credit Corporation outlays for price support and similar payments.

Bringing erosion down to acceptable levels on the remaining 38 million acres of highly erodible land under varying conditions requires different approaches with different installation and operating costs. In some cases conservation tillage, crop rotations, and contour plowing will be sufficient and compliance costs will be small. At the other end of the spectrum some operators may have to install terraces with greater up-front and maintenance costs.

An analysis of the 1983 Conservation Reporting Evaluation System data suggests that costs of bringing erosion on highly erodible land to an acceptable level would range from \$25 to \$60 per acre. Based on application of this data and judgment of professional conservationists the estimated investments are expected to be between \$800 million and \$1.4 billion on the 38 million acres. On an annualized basis--considering depreciated value of investment and reduced gross returns from crop rotations--the cost is about \$7 to \$13 per affected acre.

These conservation compliance costs are reasonably consistent with recent estimates of Dicks, who estimated costs ranging from \$7 to \$17 per acre per year with a national average of \$13/acre/year.

Soil Erosion. The 118 million acres of cropland subject to conservation compliance are eroding at about 1.8 billion tons annually, or approximately 58 percent of the 3.1 billion tons of soil erosion occurring on all cropland. Conservation compliance will reduce erosion by up to 600 million tons annually, or about 20 percent of all cropland erosion. The actual level of erosion reduction achieved will depend upon the level of compliance which is technically and economically possible. With a 45-million-acre CRP, 45 to 50 percent of all soil erosion on cropland would be eliminated. Soil erosion on cropland not meeting the highly erodible land definition would continue to the extent that it is not addressed by other traditional conservation efforts.

Soil Productivity. Reducing soil erosion will help maintain the long-term productivity of protected lands. Preliminary data from the second Resources Conservation Act Draft Appraisal of Soil, Water, and Related Resources estimates a national on-site annual loss in soil productivity of about 2.5 percent from sheet and rill erosion and about 1.2 percent from wind erosion. This translates to an average annual loss of about \$125 to \$150 million as a result of continued excessive soil erosion over the next 100 years. Conservation compliance along with CRP should reduce this loss by \$70 to \$90 million annually.

Water Quality. The major off-site effect of soil erosion is the degradation of water quality in the Nation's streams, reservoirs, and lakes. It is difficult to quantify damages to water caused by sediment from soil erosion and to quantify the extent to which these damages could be reduced through erosion control measures. We do know, however, that the opportunities for reducing these losses and damages are significant with conservation compliance and other provisions of the Act. Extrapolating data from a recent Resources for the Future study indicates that about 400 million tons of sediment a year will be prevented from reaching our waterways through these conservation provisions. Based on Economic Research Service studies of off-site benefits achieved per acre of land treated eroding at various erosion rates, it is estimated that the associated off-site benefits could approach \$1.0 to \$1.5 billion per year. These estimates do not account for benefits associated with land treated for wind erosion, which in some places are quite high.

Social Effects. Conservation compliance will create job opportunities in the private sector. Workers will be needed to install conservation practices, and the market for farm inputs used for conservation will expand. Employment for those engaged in land conversion activities is likely to be reduced. Depending on how it is ultimately implemented, conservation compliance could substantially effect the financial position and economic well being of producers, suppliers, financial institutions, and rural communities--to name a few. The nature of these effects will vary across the Nation, depending on inherent erodibility of the soil and specific crops grown. To minimize adverse effects, economics, social acceptance, and technical feasibility must be considered in determining the level of erosion control required by farmers to maintain their eligibility for certain USDA program benefits.

A social factor often overlooked in explaining conservation behavior is the direct relationship between the quality of farmland and the socio-economic status of operators. Farmers, who have been prosperous are more likely to have better land, with less need for erosion control practices, than are limited resource farmers. Farmers on better quality land are also more likely to have higher education levels and better managerial skills, and are more likely to participate actively in local and state conservation programs and organizations than are farmers on poorer quality land. These considerations must be strongly weighed in delivering a reasonable and practical approach to conservation compliance.

Summary

The effects of the additional responsibilities that conservation compliance brings to farmers must be considered. While denying the income benefits of USDA programs to farmers who continue to allow excessive erosion seems fair to most people, we have to consider whether imposing additional economic pain on some farmers is fair, considering that current conditions are at least partly the result of choices society made in the recent past. In many instances, however, farmers can increase returns while protecting natural resources.

Productivity benefits as well as off-site benefits need to be considered when evaluating the effects of conservation compliance. Present estimates should be

carefully interpreted. The best available data have been used, but more detailed studies will be needed to accurately define costs and benefits.

The conservation provisions provide for a strong conservation dimension in agricultural commodity and loan programs. For the first time in history, we have considerable compatibility and consistency among USDA programs in meeting conservation objectives. It is a unique opportunity. USDA can maintain its traditionally strong relationships with farmers, help them conserve our natural resources, and provide for a more productive and competitive agriculture.

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Figure 1 - Distribution of Highly Erodible Land, by
Crop Production Regions
(Million acres)

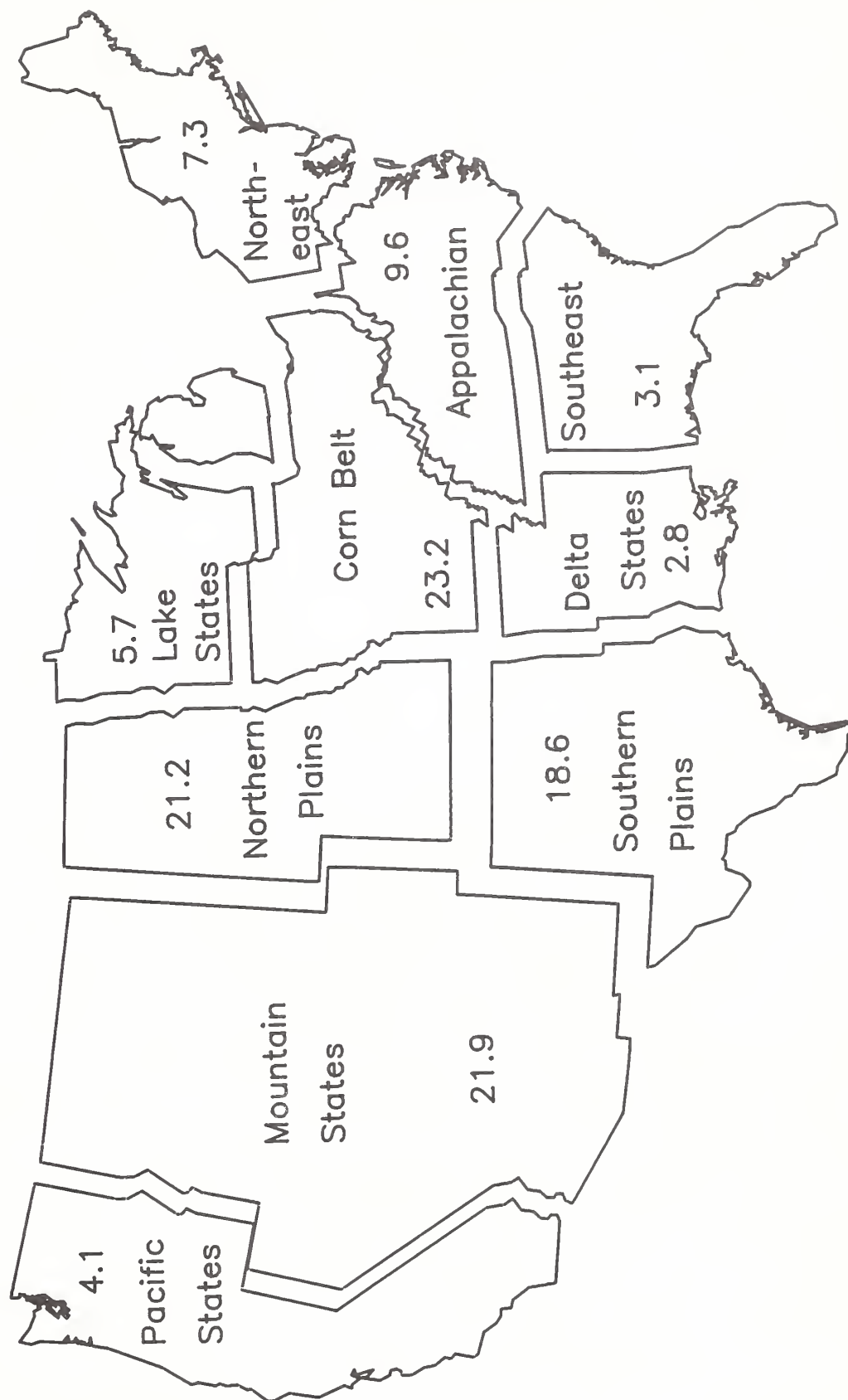
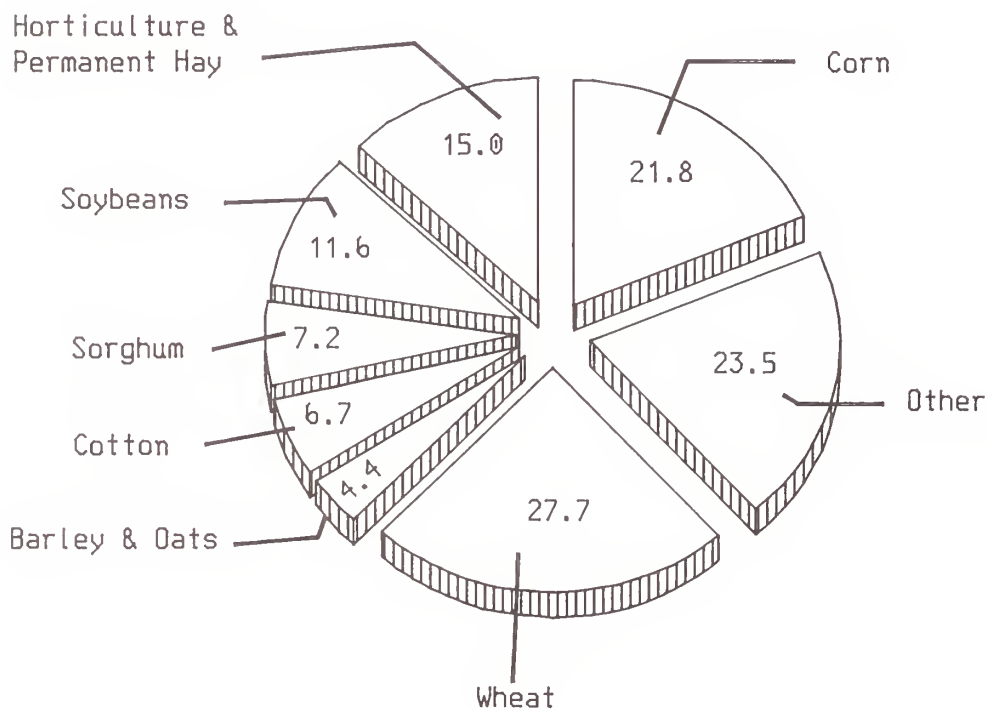
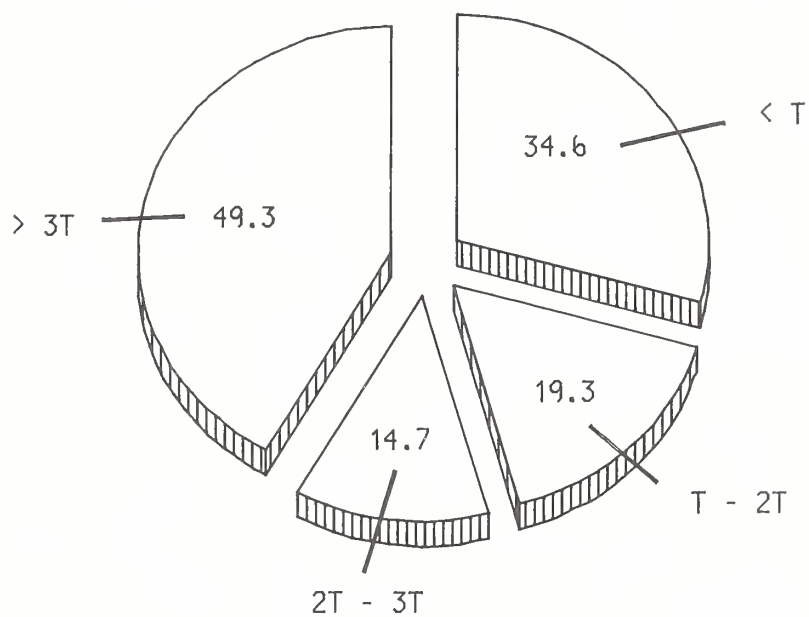


Figure 2 - Distribution of Highly Erodible Land,
by Major Crop
(Million acres)



Total = 117.9 million acres

Figure 3 - Distribution of Highly Erodible Land,
by Erosion Rate
(Million acres)



Total = 117.9 million acres

T = Allowable Erosion

ANNUAL AGRICULTURAL OUTLOOK CONFERENCE

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CONSERVATION CROSS COMPLIANCE: AN ALTERNATIVE PERSPECTIVE

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When viewed in a historical perspective, the fact that conservation cross compliance is the law of the land is quite surprising. While the concept can be traced as far back as 1936 [Kramer and Batie, 1985], through most of the farm programs' history the link between soil conservation and commodity programs was one of political expediency. That is, through most of the farm programs' history, societal support for commodity programs and conservation programs was actually support for stable agricultural income and agricultural development; conservation benefits were of secondary interest [Batie, Shabman, and Kramer, 1986]. Conservation and commodity programs were not, therefore, designed to create many soil conservation benefits.

With the rise in the environmental movement in the 1970s and the subsequent increased scrutiny of soil conservation programs, conservation cross compliance proposals resurfaced. Eventually the concept appeared as an alternative in the 1980 Review Draft of the Resources Conservation Act (RCA)[USDA, 1980]. This conservation cross compliance proposal had new objectives from those in the past, however. These objectives were the actual improvement of erosion control on the nation's croplands as opposed to conservation as a vehicle for supply control.

The initial motivation for a reexamination of the conservation cross compliance had several dimensions. The first was both environmental and ethical. This argument was that farm program benefits should not accrue to farmers who do not behave in "socially acceptable" ways with respect to soil conservation [Ervin, 1986].

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Another motivation was that, in an age of increasing agency accountability, it was an embarrassment to have commodity programs appear to be operating in opposition to conservation programs [Ervin, 1986]. Farm programs provide incentives to produce crops in order to maintain acreage base and to thereby increase the number of acres eligible to receive farm program benefits. By increasing row crops and discouraging hay and pastures, the policies tended to encourage erosion. Simultaneously, other programs were providing cost sharing for the implementation of conservation practices.

The RCA conservation cross compliance alternative initially met with considerable opposition and was politically discredited for some time [Kramer and Batie, 1985]. However, the concept eventually gained respectability, probably due to the support of Secretary of Agriculture John Block. Block declared himself in favor of the basic concept of conservation cross compliance, and he was bolstered by public polls that indicated strong public support for the concept [Kramer and Batie, 1985].

Conservation cross compliance is now part of the 1985 Food Security Act (Farm Bill)--along with some other innovative conservation features such as the Conservation Reserve, the Sodbuster, and the Swampbuster. The ultimate inclusion of these programs in the conservation title of the Bill exceeded even the wildest dreams of many of the conservation community.

There are at least two views as to why the conservation programs remained intact and became law. One is that the data was available to show these programs were environmentally sound. The data was also such that it could be used to implement the programs and to assure that the soil conservation programs involved lands that were highly erodible. This had not been the situation with previous conservation measures. Further, there was an active environmentalists coalition demonstrating that there was public support for what amounted to new Farm Bill objectives: improvement in soil conservation and associated water quality. This view purports that there was a fundamental remaking of the agricultural rules of the game; these conservation programs were major policy shifts.

Another not mutually exclusive view was that the conservation initiatives blended in well and were supportive of another Farm Bill goal--limiting budget exposure through supply control. By removing some farmers from program benefits and some cropland from production, the conservation compliance got support that had little to do with environmental objectives.

While not mutually exclusive, these views do reflect different perspectives on what occurred. If the first view is correct--even only in part--there are now three objectives of the 1985 Farm Bill:

- (1) improved soil and water quantity and quality,
- (2) farm income support, and
- (3) limiting budget exposure*.

The environmental goal was to a considerable degree, a new target the Farm Bill.

The objectives reinforced one another to the extent that supporters of each objective were willing to assist each other in designing the Bill as they desired. However, with these objectives there is an inescapable problem of choices and tradeoffs; it is impossible to maximize all objectives simultaneously.

The balancing of these tradeoffs is currently underway with respect to the conservation cross compliance. Interim regulations have been released and are being debated and revised. For the remainder of this discussion, I will address the nature, extent, and complexities of these tradeoffs. I begin by examining the impact of conservation cross compliance on the soil resource, I proceed to the impact on farm income, and end with the impact on the Federal budget. In highlighting these tradeoffs, I conclude that as the regulations for implementing conservation cross compliance are finalized, the tradeoffs between the three Farm Bill objectives will indicate whether the conservation initiatives are fundamental redirections of the conservation aspects of agricultural policies or, alternatively, a continuation of the policies begun in the 1930s. I conclude by examining the risks associated with taking either policy direction.

IMPACT ON THE SOIL AND WATER RESOURCE

The impact of conservation cross compliance on the soil resource will depend on many factors. These include the eligibility standards, compliance standards, definitions of key terms, enforcement, and future farm program participation.

Eligibility Standards

The conservation cross compliance provision of the Farm Bill makes all persons already cultivating highly erodible cropland ineligible for price support loans, purchases, and payments for

*Alternatively, the budget goal could be thought of as a constraint to the other two goals.

program crops; for loans made insured or guaranteed by the Farmers Home Administration; for federal crop insurance; and for disaster payments-- unless they implement a conservation plan by 1990 on the eroding cropland. Section 1201 (a)(7) of the Farm Bill of 1985 provides several alternatives for determining eligibility. These are the use of the SCS Land Capability Classification System, the use of the Universal Soil Loss and Wind Loss Equation, a determination the actual erosion occurring on the land, or a combination of some of these methods.

The selection of the appropriate eligibility standard is important to the ultimate impact of conservation cross compliance on the soil and water resource. Presently the interim regulation applies potential measures. This measure, the EI, is defined as the maximum predicted average annual rate of erosion divided by the average soil loss tolerance, or T. EI thus can be interpreted as the multiple the land would erode over T without a cover crop or conserving practices. Higher values of EI imply higher levels of potential erosion.

The current eligibility standard for highly eroding land is an EI greater than or equal to 8. Approximately 118 million acres of cropland are considered highly erodible by this standard. This is 28 percent of the nation's cropland; it accounts for 58 percent of all the cropland erosion in excess of 1T [USDA, 1986].

The higher percentage of highly eroding acres relative to total regional acreage using this definition are found in the Caribbean (63%), the Mountain States (51%), the Northeast States (42%), Appalachia (42%), and the Southern Plains (42%) [USDA, 1986]. As a percent of the total 118 million acres, the higher percentage regions are the Corn Belt (20%), the Mountain States (19%), the Northern Plains (19%), and the Southern Plains (16%) [USDA, 1986].

If the conservation cross compliance and the conservation reserve were fully implemented so that every eligible acre as identified by the current EI standard had erosion rates at 2T or below, soil erosion would be reduced by 1.2 billion tons annually or 46 percent of all erosion on cropland [USDA, 1986]. Of this, perhaps 400 million tons of sediment per year would be prevented from entering surface waters [Margheim, 1986]. However, of this 1.2 billion tons, 600 million tons of soil or 20 percent of all erosion from cropland will be conserved due to the conservation cross compliance program. [Margheim, Personal Communication, December 3, 1986].

There is not a one to one correspondence of the use of the EI as the standard and the use of either the land classification system

or the use of soil tolerance limits. Of the 118 million acres identified with an EI greater than or equal to 8, for example, almost half (47%), or 54 million acres is being farmed in a way to reduce erosion below 2T [Dicks and Vertrees, 1986]. Also, the EI definition includes 21 percent of the Land Class IIe and 55 percent of the Land Class IIIe [USDA, 1986].

At the same time, the EI greater than or equal to 8 standard exempts land that has excessive rates of erosion despite a low physical potential. There are an estimated 40 million acres that are eroding above 2T but are not accommodated within the EI greater than or equal to 8 definition [Dicks and Vertrees, 1986].

Thus, different eligibility standards --different EIs, use of the Land Classification System, or use of soil tolerance limits-- result in different acres being affected. The potential direct impact on the environment will depend in part on the choice of the definition of what is to be considered highly eroding lands.

Compliance Standards

The potential impact on the soil and water resources will also depend on the definition of compliance. Section 12.5(b)(2) of the interim rule stipulates that in order to retain eligibility for program benefits, farmers will be required to reduce erosion on highly erodible land below the soil tolerance limit, 1T. However, Section 12.5 (b)(3) allows for exceptions to 2T on the basis of the reasonable judgment of the conservation professionals.

There is also currently discussion of implementing this compliance feature of the conservation cross compliance program in a more flexible manner than stipulating soil tolerance limits as standards. Compliance might be determined on a case by case basis as part of the soil conservation planning procedure which relies on the judgment of professionals as to what is technologically feasible, socially acceptable, economically effective, and financially sound.

Again the ultimate impacts on the natural resources will be, in part, a function of the selection of compliance standards.

Implementation: Other Issues

There are other factors that will influence the ultimate impact of conservation cross compliance on the soil and water resources. These include the definition of a field. A field is presently determined to have a predominance of highly erodible land if (1) the field contains 50 or more acres of highly erodible land or (2) more than 33.3 percent of the field is highly erodible. This

definition means that, under the interim rule, as much as 49 acres of highly erodible land could be farmed without losing farm program benefits as long as the total field exceeded 147 acres. The 50 acre definition clearly has less stringent impacts than would, say, a 10 acre definition; similarly the 33.3 percent designation has greater impact than if a field need have only 20 percent to be classified as highly eroding.

Enforcement

Determining the impacts of conservation cross compliance on the soil resource also depends on the level of enforcement that accompanies the implementation of the program. The agency professionals do not relish the role of being the compliance "police" and will no doubt attempt to implement conservation compliance with as much reasonableness and flexibility as then can. There will be pressures, however, for lax enforcement and "creative" interpretations of any standards. Furthermore, one person's definition of a reasonable solution, may be another persons definition of a unjust taking of private property rights. Reasonable people can differ over what is to be considered reasonable.

Also, throughout the country conservation plans can be disparate as slightly different procedures and/or slightly different definitions of important planning terms are used. Thus one soil conservationist might use a slope value for planning that differs from the neighboring area across a political boundary, despite the similiarity of the physical environment.

Farm Program Participation

No matter how stringently the regulations are designed and enforced, the conservation cross compliance will have impact only to the extent that the lands designated as highly erodible are controlled by participants in the various farm programs. Margheim [1986] estimates that currently producers on about 80 percent of the highly erodible land will want to maintain eligibility for USDA program benefits. This is the highest estimate I have seen in the various studies investigating conservation cross compliance proposals. The magnitude of this estimate stems from the current high participation in commodity programs. The 1986 commodity programs attracted 85 percent of the corn acreage, 84 percent of the wheat acreage, and 91 percent of the upland cotton acreage [USDA, 1986].

Studies conducted prior to these high enrollments concluded that the conservation cross compliance will not attract large numbers of the owners of fragile lands if they have to comply with low erosion control requirements [Ogg, 1985; House, Ogg, Clayton, and

Johnson, 1981; Batie and Sappington, 1985)

Reichelderfer [1985] examined eight areas of the country which had critical erosion problems. She concluded that, in a given year, between one half and three fourths of the cropland eroding above 5 tons per acre per year level is operated by individuals not participating in commodity or USDA conservation cost share of technical assistance programs. She states, "efforts to increase the consistency of USDA commodity and conservation programs would contribute little to overcoming the Nation's total erosion problems" [p.i]. Clark [1984] concluded that the conservation cross compliance offers more potential to eliminate program inconsistencies than to achieve soil conservation.

Also, various regions would be influenced more by conservation cross compliance than others [Ogg, 1985]. Program participation rates are the greatest, in order, for wheat cotton, and sorghum [Reichelderfer, 1985]. Thus, participation rates tend to be high in the High Plains, North Central and Southern States. Credit program subsidies are concentrated in the Southeast. These are not the areas with the higher percentages of highly eroding lands as defined by EI equal to or greater than 8, that is, the Mountain, Northeast, Appalachian, and Southern Plains states.

Thus, the impact of conservation cross compliance on the nation's soil and water resources is not only a function of the implementation definitions, but is also dependent on future farm program participation. For farmers the decision to comply is an annual one which compares the expected program benefits with the costs of compliance. If commodity prices are high [low] without programs, or if commodity programs are changed so as to contribute fewer [more] benefits, the potential impact of conservation cross compliance is diminished [increased].

A related issue is the impact on erosion rates as non participants adjust their cropping patterns. In many years, the main beneficiaries of farm programs are those farmers who remain out of the programs and adjust their cropping patterns. Furthermore, with the implementation of conservation cross compliance, some farmers who formerly participated may elect to exit the programs rather than comply. They will also be exiting from obligations to participate in diversion or set aside acreage reductions as well. An important assessment, then, is the resultant net change in erosion damage that will result from the implementation of the compliance program as compared to the situation with no program when consideration is given to non farm program participants actions as well as participants.

IMPACT ON FARM INCOME

Another goal--and historically the paramount goal of the Farm Bill-- is farm income enhancement and stabilization. The impact of the conservation cross compliance on this goal involves tradeoffs with the conservation goals discussed above. The more stringently the compliance features of the program are interpreted, the more difficult it will be for farmers to comply and the more likely farmers are to exit the farm programs.

USDA has estimated that aggregate costs to farmers to fully implement compliance on 118 million acres range from \$700 million to \$1.3 billion if erosion rates were to be reduced to 2T. These estimates were \$1.9 billion to \$2.9 billion if erosion rates were to be reduced to 1T [USDA, 1986]. Many farmers could spread these costs over a five year period.

It is difficult to estimate the ultimate impact, however, until there is an estimate of how many farmers will exit the program rather than comply, how many of the program participants actually control the highly eroding lands, and how non participants will adjust their cropping patterns. For example, if many farmers exit [remain in] the programs and increase [decrease] their planted acreage, market prices could decline [increase] due to the existence of the program.

Not all farmers will be affected directly. Those who have high benefits from the farm programs and who farm highly eroding lands have the greater impacts. From the estimates presented earlier, these farmers include the wheat growers of the Palouse, the cotton farmers of the Southern High Plains, and the corn farmers in the Mountain states. A stringently designed and vigorously enforced conservation cross compliance might result in regional shifts of some cropping practices--such as the movement of some of the corn growing activities out of the Mountain States and into the Corn Belt.

Another farm income issue is the capitalization of benefits. Farm program benefits tend to be capitalized into the value of the land. Since highly erodible land are just as valuable as acreage base as non eroding lands, there should not be a difference in the level of farm program benefits capitalization between the two types of cropland. A stringently designed and enforced conservation cross compliance could conceivably alter this calculus. The changes in land values that could result would be a function of the cost of bringing the highly eroding lands into compliance.

IMPACT ON THE BUDGET

One reason for the passage of conservation cross compliance with so little opposition was it has some attractive budget features. Farmers who do not comply will exit the farm programs with the resulting budget savings that accompanies fewer participants. Furthermore, the conservation cross compliance program provides an incentive for eligible farmers to join the conservation reserve. High enrollment in the conservation reserve can reduce program payments as well.

It is not necessarily true that highly erosive lands are also those that are marginal and nonproductive [Ogg, Webb, and Huang, 1984]. Studies of set aside programs for example, show that the distribution of diverted acres by land capability class tend to reflect the same distribution as cultivated cropland [USDA, 1984]. This may mean that lands either removed from commodity crops either for compliance or to be part of the conservation reserve may be more productive than the acres farmers have elected to divert from production in the past.

If these lands are diverted, and if slippage--increased production on non diverted acres-- is not too great, then supply of commodities may indeed decline. However, if many farmers chose not to comply and exit the programs and the programs acreage reduction obligations no longer apply, then the commodity crop supply could increase, market prices could weaken, and ultimately farm program costs could rise.

Administrative Costs

Another impact on the budget which is probably large, but very difficult to estimate is the administration costs that accompany the design, implementation, and enforcement of the conservation cross compliance program. These costs tend to be neglected in any program cost estimates partly because they are so difficult to ascertain and partly because many of the costs are fixed costs already accounted for in existing budgets. These fixed costs are comprised mainly of salary expenses of current conservation personnel. Nevertheless, these are actual costs of the program. If conservation personnel are designing, implementing, and enforcing the conservation cross compliance features of the Farm Bill, they are having to delay or forgo other work of value.

TRADEOFFS BETWEEN GOALS

Tradeoffs between the three goals are inevitable. Stringent standards and strict enforcement of the conservation cross compliance would most likely have a negative impact on farmers

incomes. Farmers would either have to bear the costs of compliance or exit the programs.

Exiting the farm programs would presumable increase supply with an attendant downward pressure on market prices. The ultimate impact on the budget would depend on whether the savings from the probable fewer participants in the farm programs exceeds the probable increase in deficiency payments as market prices declined.

If fewer farmers exited the program, but many protected their highly eroding lands, there would still be an initial negative impact on farm income as farmers implemented conservation practices or diverted the highly eroding fields to non commodity crop purposes. If enough farmers removed highly eroding acres from production, without offsetting behavior on the remaining acres in crop production, there could be supply control benefits that accrue.

CONCLUSIONS

Conservation cross compliance as defined in the Farm Bill of 1985 fulfills several of the initial motivations that accounted for its initial support. It removes many of the apparent program inconsistencies*, and it provides a strong ethical statement that social obligations attend farm program benefits. It is less clear how much actual environmental improvement will result from the implementation of the conservation cross compliance program--regardless of how stringently the regulations are designed--due to the uncertainties associated with farm program participation.

The design of the regulations are crucial however in determining the magnitude and distribution of the costs associated with the implementation of conservation cross compliance. Furthermore, there are associated risks if the design is perceived as a weakening of a commitment to the ethical obligations whereby receipt of farm program benefits is contingent on improved environmental management.

Many participants influencing legislation that affects the farm sector have a different perception of modern agriculture's

* While conservation cross compliance removes many program inconsistencies, it does not eliminate commodity program disincentives for retirement of highly eroding land although it does offset some of these disincentives. An alternative mechanism to remove disincentives would be the exclusion of highly erodible land from acreage base [Hoag, 1985].

relationship to the environment than has traditional Farm Bill interest groups. These non-traditional groups will continue to strive to insure that any commodity program goals will be constrained by the need to be consistent with the goal of protecting the natural environment. Whether these constraints operate through the traditional farm and natural resources policy channels, or whether they are imposed through new legislation outside the traditional agricultural sphere will likely depend on the response of the traditional designers of the Farm Bill. The risk of by trading off too many of the environmental goals for farm income goals is that such actions may ultimately discredit the entire public commitment to resource programs through agricultural institutions [Batie, Shabman and Kramer, 1986].

On the other hand, too stringent implementation of the conservation cross compliance program neglecting farm income impacts, may invite open confrontation with negatively affected farm groups. This could negate much of the progress that has taken place as a result of the coalitions and compromise between various groups with an interest in agriculture.

Such a balancing of goals is a tremendous challenge.

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GENERIC CERTIFICATE PROGRAM

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In this paper and the presentation that will be made before the Agricultural Outlook Conference, I will confine my attention to generic commodity certificates or scrip. I want to address a number of issues in the hopes of improving your understanding and perspective, including:

- o What opportunities exist to use scrip
- o How generic certificates are "priced"
- o How they affect cash grain markets
- o What the future is for scrip

I am going to make an assumption that most people in the audience have some knowledge of scrip and base my presentation on this assumption. I am also going to assume that you have some knowledge of the grain business and can differentiate between a flat price, a futures price, and a cash basis.

As background, let us take a look at a scrip, define what it is, and how it can be used.

Scrip is given in lieu of cash payments by the CCC. Scrip provides a mechanism for the market to consume burdensome CCC stocks and to liquidate outstanding CCC commodity loans, thus precluding the forfeiture of additional commodities to the CCC.

The importance of the USDA's decision is that generic scrip has the potential to neutralize traditional loan economics, making it possible for any of the grain under loan, in the reserve, or owned by the CCC to become available at prevailing market prices. In addition, it has the potential to at least temporarily eliminate the price supporting influence of the loan, thus giving us the effect of a marketing loan.

The first "scrip" was issued about eight months ago, to eligible producers, those elected to participate in Government price support programs for wheat, corn, and certain other commodities. Scrip can be exchanged for certain CCC

owned commodities, used to redeem commodities, pledged for producer loans, used to avoid incurring commercial storage or on-farm storage costs, sold for cash or traded in the marketplace, or held and redeemed for cash with the government. The last alternative makes little sense, given current market conditions and the fact that scrip is worth a 15-20 percent premium over their face value.

- o Scrip can be used to purchase CCC owned commodities.
- o Scrip can be used to pay off Commodity Credit producer loans at posted county prices as part of the "PIK and Roll."
- o Scrip can be used to avoid incurring commercial storage or on-farm storage costs.
- o Scrip can be sold for cash or traded in the market.
- o Scrip can be held past the appreciation date and sold back to the Government at face value less 4.3% (Gramm-Rudman).

To date, several billion dollars' worth of scrip have been issued by the Government. The majority have been used to acquire CCC stocks or to pay off outstanding CCC producer commodity loans.

The predominant applications for scrip have been the "PIK and Roll" or "PIK, Roll, and Substitute" programs. However, in certain instances scrip has been used to acquire government owned CCC stocks. The "PIK, Roll, and Substitute" program was terminated by the USDA in late October.

The "PIK and Roll" program was really established to aid producers with storage space problems in the fall of 1986. The program essentially allows the producer to conveniently secure his crop loan, pay off the loan with scrip and sell the commodity, or feed the commodity on his farm.

As mentioned above, scrip has been trading at a premium to its face value. The premium results because scrip has been in relatively short supply and the opportunity to profit from redeeming commodities (primarily corn to date) under Government loan with scrip is large. Let's look at an example of corn redemption using the "PIK and Roll" program. I assume that the producer has

no available storage space on farm or at his local elevator and that he will therefore be forced to sell his corn.

Local loan rate for corn	\$1.85/bushel
- cost scrip (125% x \$1.35 PCP)	<u>1.69</u>
Gross gain	\$ <u>.16</u> /bushel

Local Elevator bid	\$1.40/bushel
+	<u>.08</u>
Effective Sales Price to Producer	\$ <u>1.48</u> /bushel

Local Elevator Bid	\$1.40/bushel
-	<u>.08</u>
Effective Price Paid by the Elevator	\$ <u>1.32</u> /bushel

The "PIK and Roll" transaction generally has involved a commercial elevator/operator and a producer. The \$.16/bushel gain reflected in this example has been shared by these parties. There are risks inherent in the transaction for the commercial operator plus there is a significant increase in his administrative workload. Therefore, some compensation has generally been considered appropriate.

In the above example, let's assume the producer sells the corn to the commercial operator at his truck bid of \$1.40. Let's also assume the \$.16 gain is shared equally between the producer and the commercial operator. The producer effectively receives \$1.48 per bushel for the grain involved in the "PIK and Roll" program. This is eight cents more than he would have received had he simply sold the grain to the commercial operation. By the same token, the commercial received eight cents for his additional work and the risk he took. Assuming everything goes per plan, the commercial operation in effect bought the grain at \$1.32. In this example, both parties involved in the transaction benefit. This has generally been the case.

Note that if the producer has on farm storage, he can "PIK and Roll" without the involvement of a commercial operation and gain the entire \$.16 himself.

Let's examine how scrip is priced and why it has been trading at a premium to face value. Keep in mind the Government likes scrip to trade at a premium. The producer receives scrip based on face value. If the Government is going to pay the producer \$1,000 in scrip, they issue him a certificate with a face value of \$1,000. If the market values scrip at 125%, the producer can sell the scrip for \$1,250 and pick up an extra \$250. This premium makes the program attractive to producers in that their financial position is enhanced.

The premium (or discount) scrip trades in relation to par will primarily be a function of two factors:

- o the supply of scrip in the market.
- o the opportunities which exist to use scrip to profitably redeem commodities (demand).

Let's use the example we looked at earlier to establish a maximum theoretical value for scrip.

- o Local Loan Rate \$1.85/bushel
- o PCP \$1.35/bushel

<u>Scrip Price</u>	<u>Net Gain</u>
100%	\$.50/bu
110%	.36/bu
120%	.23/bu
130%	.10/bu
137%	0 cents

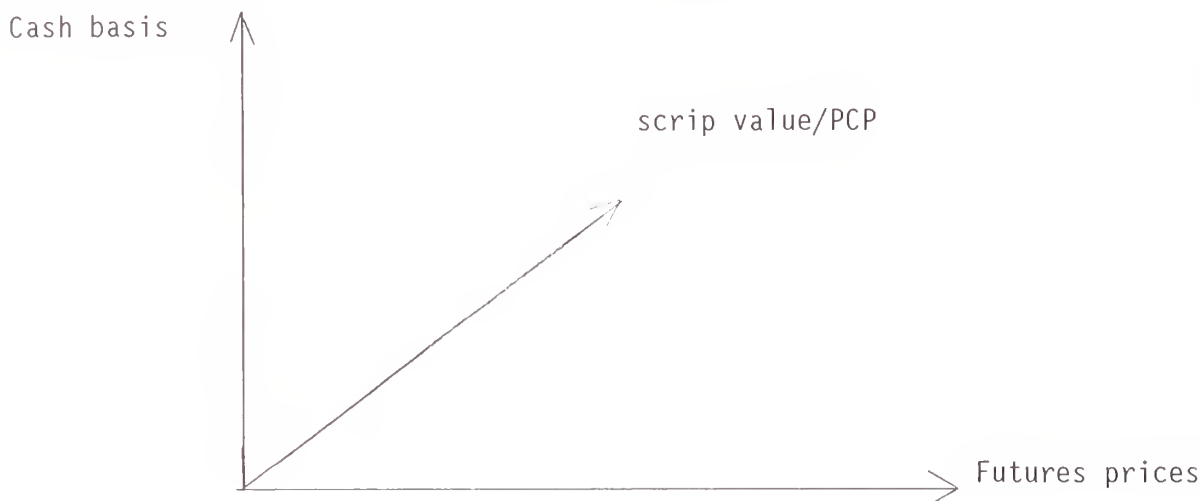
If scrip is trading at 137%, one would be indifferent between paying off the loan with scrip or leaving the loan outstanding.

Therefore, a producer should theoretically be willing to pay up to 137% of par to acquire scrip to take advantage of his PIK and Roll opportunity. The highest price that I am aware someone has paid for scrip is 136%, and that was in late October.

As the Government increases the supply of scrip, it will have a depressing effect on the premium. I believe the government will meter the issuance of new scrip so that they will continue to trade at a premium to par. I expect that certificates will trade in a 110% to 125% range for awhile. However, as the supply of scrip in the market increases this winter and next spring, the premium will decline, perhaps approaching 105%.

In a general sense, most people believe that the scrip program has a depressing effect on the value of affected agricultural commodities, particularly corn to date. While I believe this to be true, I do not think the impact is as great as some believe because the USDA has limited the issuance and supply of scrip. Most of the grain that came onto cash markets through the "PIK and Roll" programs this fall was destined for the cash market anyway because there was not space to store it. The futures market tended to overestimate the effect of "PIK and Roll" and the drop in futures prices for corn was exaggerated as a result. September corn futures reached a low of \$1.49 per bushel.

The presence of scrip (and the "PIK and Roll" opportunities) adds a third dimension to trading commodities (grain). This diagram is meant to depict the three dimensional effect of the scrip program.



It used to be that the flat price of grain was a function of the futures price and the local cash basis. Prices were located somewhere in a plane described by the cash basis and futures prices. However, the PCP value, integral to the "PIK and Roll" program, introduces a third dimension to the equation. The value of cash grain does not necessarily conform to some of the traditional rules followed in the past. As a result, prices may drift in space. Keep in mind that the influence of the scrip component has generally been negative to price, if it has had any effect at all.

There is a relationship between the value of scrip, the futures price, the cash basis, and the PCP. The cheaper the future prices or the cash basis, the lower the PCP, the higher the theoretical value of scrip becomes because of the differential between the local loan rate and the PCP. Given a fixed supply of scrip, one would expect the value (premium) to be highest when commodity prices are cheapest. It is interesting to note that it is to the advantage of the scrip recipient to have lower commodity prices, not higher. The more bushels a holder can buy with his generic scrip, the more profit he can make. Consequently, he prefers lower prices because that generates more revenue. Some rules which should generally hold up are outlined below:

- o Basis down, scrip up.
- o Futures down, scrip up.
- o Basis up, scrip down.
- o Futures up, scrip down.

Understand these are generalizations. There are no absolute statements which can be made about expectations.

I believe the government is committed to continuing the scrip program and I believe scrip will be with us for the next few years. Commodity traders and producers alike seem to like the scrip program. Not only does it offer new merchandising/marketing opportunities, it adds to the liquidity of our markets, thereby facilitating trade and, as mentioned above, it is another vehicle to channel funds to producers in need of assistance. Over the next twelve months, I expect the Government to release about \$8 billion of scrip into the market and I believe most of this will be used in connection with corn.

Let's take a look at specifics. To-date the USDA has issued about \$3,000MM of scrip. Most of this came into the market as a result of the Advanced '86 Crop Deficiency, the Paid Diversion, and the Supplement to the Advanced Deficiency Program.

I am assuming that about 50% of the payment to producers for deficiency and paid set-aside programs will be in the form of scrip. Given this assumption, the following table summarizes the major sources of scrip for the next ten months.

<u>Program</u>	<u>Scrip Availability Dates</u>	<u>Estimated Total Payment</u>	<u>Estimated Scrip</u>
Advanced Deficiency for '87 Feed Grain	Nov 17, '86 - March '87	\$5,400MM	\$2,700MM
Advanced Paid Diversion for Feed Grain	Nov 17, '86 - Mar '87	950MM	475MM
Final Deficiency for '86 Wheat and 5 Month Payment for Oats/Barley	December '86	2,150MM	1,075MM
Five Month Deficiency for Corn/Sorghum	March '86	750MM	375MM
Final Diversion for '87 Feed Grain	July '87	950MM	475MM
Final Deficiency for Corn/Sorghum	October '87	3,150MM	<u>1,575MM</u>
TOTAL			\$6,675MM

In addition, there are about \$1,000MM of other scrip payments which I expect to be made over the Oct '86 - Oct '87 period. This totals a little less than the \$8 billion mentioned earlier. Critical to my analysis is the payment rate I have assumed.

With that I would like to draw this paper to a close. I hope the discussion and explanation has been helpful.

ANNUAL AGRICULTURAL OUTLOOK CONFERENCE

United States Department of Agriculture

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CHANGING SHARES OF THE U.S. SWEETENER MARKET: THE OUTLOOK FOR SUGAR

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Introduction

U.S. farm legislation has been unfair to sugar. By setting high support levels for only one segment of the sweetener market, the government has created a "price umbrella" whereby the technology to produce alternative sweeteners has been extensively developed.

These products, which are usually uncompetitive with world priced sugar, are able to undercut domestic sugar prices, and are consequently replacing sugar in many segments of the market place. As a result, per capita consumption of sugar has decreased by over 30% since 1979.

The current legislation uses a system of import quotas to maintain supply/demand equilibrium in the market by restricting the amount of sugar countries can sell into the U.S. As demand for sugar decreases, these quotas are cut to compensate. The smaller the overall sugar quota, the lesser its ability to control prices in the market becomes. The program is therefore killing itself. It forces artificially high prices which attract sugar substitutes, then the ensuing drop in sugar consumption forces a quota cut which undermines the entire program.

The government needs a sweetener program of a type which is fair to all participants in the sweetener market, not just the non-sugar sweeteners.

This paper will review the composition of the sweetener

market, the changes which have taken place, and finally review some of the alternatives which are available to reestablish fair competition for all sweeteners.

U.S. Caloric Sweetener Demand

Sweetener demand in the U.S. can be divided into two main categories, caloric and non caloric or low calorie sweeteners. Caloric sweeteners are primarily sugar, or sucrose, high fructose corn syrup (HFCS), and other corn related sweeteners such as glucose and dextrose. The non-caloric sweetener group comprises all low-calorie sweeteners, the largest of which is aspartame, known commercially as Nutrasweet.

The sugar market is further broken down into three principal components. Firstly, domestically grown beet sugar, which had a share of approximately 37% of domestic sugar deliveries in fiscal 1985/86. Secondly, domestically grown cane sugar with a similar share. Lastly, there is imported raw cane sugar, which in 1985/86 comprised approximately 25% of domestic deliveries, down from 45% of deliveries in 1980.

Although consumption of low calorie sweeteners has increased substantially in recent years, this has not significantly impacted caloric sweetener demand. As illustrated in Table 1, it is the shares of the caloric sweetener market which have changed. The decrease in consumption of sugar has been attributable almost solely to the increase in consumption of corn sweeteners, principally HFCS. To illustrate this point, the decline in sugar consumption from 1979 to 1986 was 28.4 lbs. per capita. Over the corresponding period, HFCS use on a dry basis increased by 29.8 lbs. per capita.

The primary reason for this drastic change in consumption trends has been the U.S. Farm Program. Since the world price of sugar has dropped from its yearly-average high of 29.02 cents per pound in 1980 (see Table 2), the U.S. Domestic price, protected by the various farm support programs, has averaged over double the world price for sugar.

Whereas most corn sweeteners throughout the world are more expensive to produce than sugar, the U.S. farm program has created an artificially high price for sugar which has opened the door for large investments in alternative sweeteners which can profitably be sold at less than domestic sugar prices, but well above world sugar prices.

The principal sweetener to gain prominence under this situation was HFCS. It's share of the sweetener market has been steadily increasing, and culminated with the switch to 100% HFCS

use by the soft drink industry in 1984-85. While most estimates suggest that the penetration of liquid HFCS is virtually complete, technological development has not ceased. Recent developments in the economic production of crystalline fructose have opened the doors for further replacement of sugar by corn-based sweeteners.

Changes In The Sugar Profile

The decline in sugar consumption has not impacted all participants of the U.S. sugar industry evenly. By restricting the availability of off-shore raw cane sugar through quotas to maintain supply/demand equilibrium, the Farm Bill forces any decrease in demand for sugar to be offset by a decrease in cane sugar imports. Thus the cane sugar refining industry, having its source of supply cut, has been the main victim of falling sugar consumption. Table 3 illustrates the different shares of the sugar market. As can be seen, cane sugar as a percentage of total sugar has declined from 72% in 1979 to an estimated 63% in 1986, a decreasing percentage of a decreasing market.

This decrease has resulted in the closing of 8 refineries since 1981, with a loss of close to 3,000 jobs.

The cane refiners have been further hurt by the inflow of high-sugar content blended products which enter the United States outside the principal sugar quota. There have been large amounts of sugar/dextrose consumer blends, iced tea mixes, gelatin mixes, chocolate, and other products entering the U.S. under either subsidiary quotas or with no quotas whatsoever. These products further decrease the overall market for domestically refined sugar, and consequently the amount of sugar available to cane refiners to process and sell. Some of these products, such as the sugar/dextrose blends, apparently have been conceived solely to circumvent the U.S. quota system and to introduce low priced world sugar into the U.S. domestic market.

The other victims of the current U.S. sugar policy are the U.S.'s trading partners. The sharp decline in the U.S. imports of sugar (Table 4) has meant large decreases in export earnings for CBI and other Latin American nations, as well as lesser developed nations elsewhere. Between 1981 and 1985, revenue from sugar sales to the U.S. has declined by over sixty percent for CBI and other Latin American countries, as can be seen in Table 5. Projections for continued diminishing sugar quotas reaffirm this trend.

The Future

The Agriculture & Food Act of 1985 has set the weighted average loan rate for cane sugar at 18 cents per pound for the fiscal years 1986 through 1990. This will maintain sugar prices at their current levels.

The result is twofold. Firstly, the continuance of high prices allows for further development and sales of alternative sweeteners which can be sold at lower than sugar prices. Secondly, the resulting decrease in sugar consumption will translate directly into further cuts in the sugar quota. This trend is reaffirmed by examining next year.

The USDA has forecast domestic sugar deliveries for fiscal 1986/87 at 7.75 million short tons, raw value, a decrease of approximately 100,000 tons from 1985/86. At the same time, domestic production is expected to increase for both beet and cane. A further decrease in the import quota can therefore be anticipated.

Table 6 sets out a likely scenario. In order to maintain supply/demand equilibrium, any decrease in consumption and increase in domestic production must be offset by a decrease in the quota. Using the USDA forecasts, if stocks are not allowed to change, the fiscal year October 1/86 - September 30/87 would have a quota of only 1.4 million short tons raw value (STRV). This represents a decrease of over 16% from last year. As consumption falls, however, stocks cannot remain at a static percentage of consumption and continue to fall as well. As beet sugar becomes an increasing larger portion of the overall sugar supply, the longer supply lines required for beets must be taken into consideration. Increasing domestic raw cane sugar production and the consequent increase in stocks also become a larger portion of the whole picture. Cane refiners will maintain their minimally acceptable inventories as well. If consumption is going to fall, therefore, then stocks as a percentage of consumption must rise. In Table 6, ending stocks have been set at 20% of consumption. This will allow the sugar quota to be set at 1.69 million STRV. Any quota smaller than this will most likely force unacceptable inventory levels in the sugar industry.

It is only the increase in stocks, however, which keep the 1986/87 quota as high as this forecast. 1988 and onwards will likely see much smaller quotas. This will mandate further closures in the refining industry, and further cuts in the export earnings of our Latin and Caribbean neighbors. Furthermore, it implies that the sugar quota will decrease even further in its ability to regulate supply and demand in the U.S. market.

The sugar program, proving itself unworkable, is also proving

itself very expensive. In 1986, the difference between the U.S. price for raw sugar delivered to the East Coast and world priced raw sugar delivered to the East Coast is estimated to be approximately 13 cents per pound. If this price differential applied to all domestic deliveries, it implies an incremental cost by sugar users of over two billion dollars annually, or a subsidy of some \$170,000 per farmer. Although this calculation is over-simplified, the lesson is valid. The U.S. sugar program costs too much, and is unjustly changing the composition of the entire sweetener market, not just the sugar market. It must be changed.

Many participants in the U.S. Sugar Industry find the current situation unacceptable. Consumers and industrial users are forced to pay inflated prices for sugar. Sugar producers find it unacceptable that corn related sweeteners can continue to undercut these prices. Food processors are faced to compete in certain markets with low priced world sugar in blended products.

Alternative Solutions

The U.S. sugar program has forced sugar into an uncompetitive position in the sweetener market. There should be a program which is as fair to sugar as it is to other sweeteners, to allow natural competition to occur. The U.S. needs a sweetener program, not a sugar program. Any restrictions which apply to sugar alone fail to recognize that there are alternatives to sugar.

While it is impractical to allow sugar to fall fully to a world-market based price, there should be some price reduction to allow sugar to compete evenly with alternative sweeteners, as well as a program which allows less competitive growers to economically cease sugar production.

Firstly, there should be a reduction in the price supports, or loan rates. Although this will decrease the returns to farmers, it is both equitable in relation to other commodities and necessary in order to stop further reductions in sugar consumption. Some of the decreases in revenue to the growers could be made up by deficit payments, financed through excise taxes or import fees. Revenues from import fees would presumably grow over time as uncompetitive farmers switch back to other crops, and the import quota rises. Naturally, this would help the ailing cane refiners and those countries which export sugar to the U.S.

To soften the impact of this program, the USDA could offer sugar farmers the buyout proposal which the current farm bill offers for the dairy industry. This is where the USDA would

actually pay farmers to decrease their sugar plantings and idle their equipment for a fixed period of time. Alternatively, it could pay processors to process less sugar and pass the payment back to those farmers who cut back on their plantings, an administratively easier prospect. This buyout could easily be financed by a small levy on all domestic production.

The final objective of a program such as this is to return domestic sugar production to a level consistent with farm economics, bring sugar into a competitive position with corn sweeteners and therefore stop the slide in demand, allow the cane refiners a chance to remain a part of the sugar industry, and to increase the sugar quota to the benefit of many of the USA's poorer trading partners.

An alternative to improve competition in the sweetener market is to install domestic production controls on all sweeteners. This also allows sugar to compete with corn sweeteners for its fair share of the total market, while guaranteeing stability throughout the market. Most participants in the sweetener market, however, feel that this is a last resort.

These programs will allow better competition in the sweetener industry, compensate well the efficient farmers, allow some space for the sugar imports which are so vital to many of our trading partners' export earnings, and reverse some of the injustices done to sugar. They are, however, medium to long term solutions.

In the short term, certain injustices vitally need to be reversed. These are the enforced closing of cane sugar refiners due to quota cuts and the huge decreases in sugar imports from America's Latin and Caribbean neighbors. By allowing cane refiners access to duties paid in the 1977-85 period in the form of drawback, the government will provide a means whereby the refiners can be compensated for their lost share of the domestic market by increasing their exports substantially. The cane refiners viability is then preserved while longer term solutions are being developed. Latin American and Caribbean nations will have an enlarged nearby market for their sugar, in partial compensation for the cuts in the U.S. Import Quota. A program such as this is to the detriment of no one in the sweetener market.

Conclusion

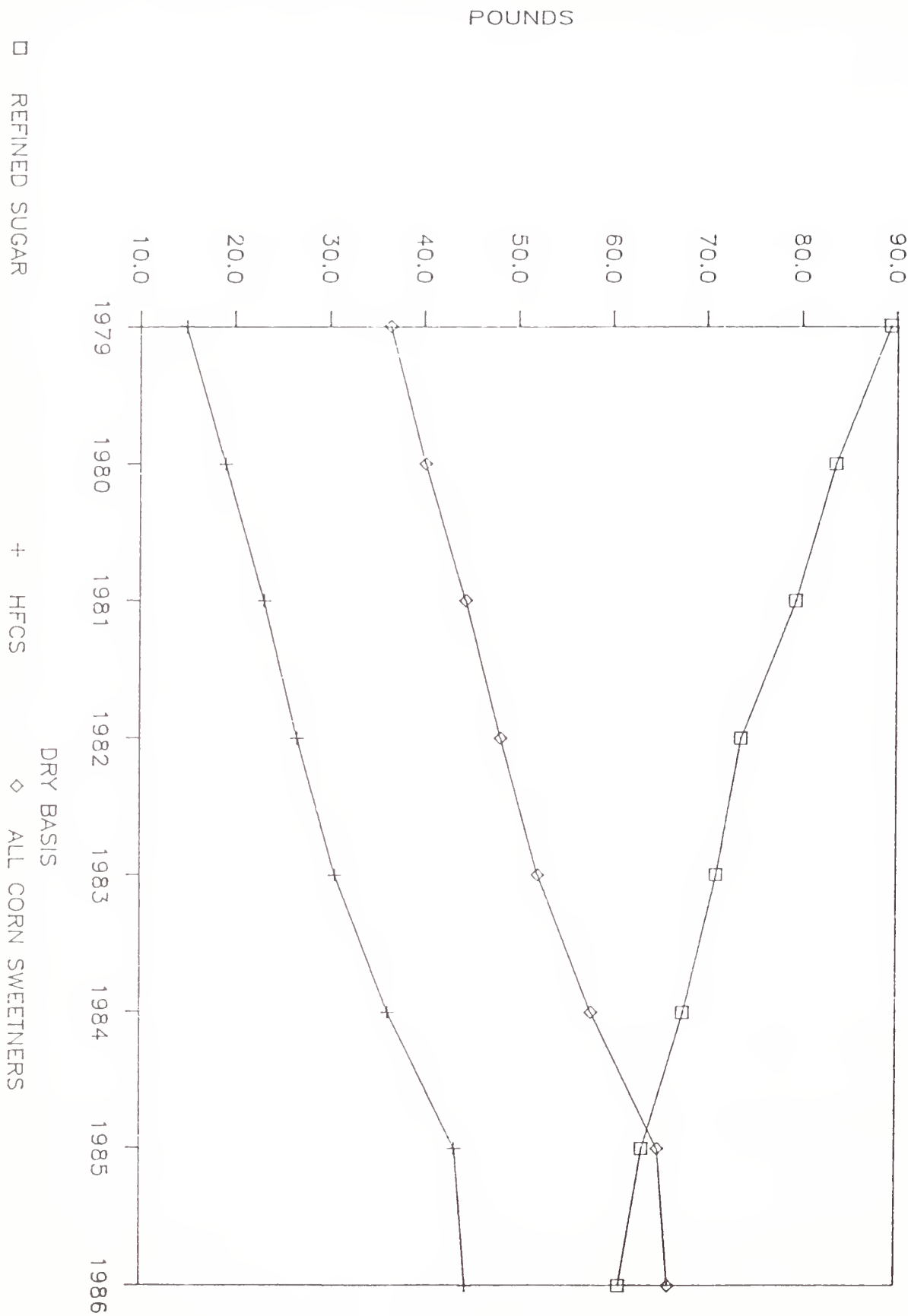
Under current U.S. farm legislation, sugar will be forced to play an increasingly smaller role in the overall sweetener market. The major reason for this is that the Farm Program fails to recognize the alternative sweeteners available in the market

place in a similar fashion to sugar. Sugar has therefore been forced out of several of its historical markets.

The only way to reverse this trend and allow sugar to freely compete with other sweeteners is to change the legislation to recognize that there exists a sweetener market, not simply a sugar market, and that all components of that market should be in a position to economically compete with one another.

TABLE 1

PER CAPITA CONSUMPTION OF CERTAIN CALORIC SWEETENERS



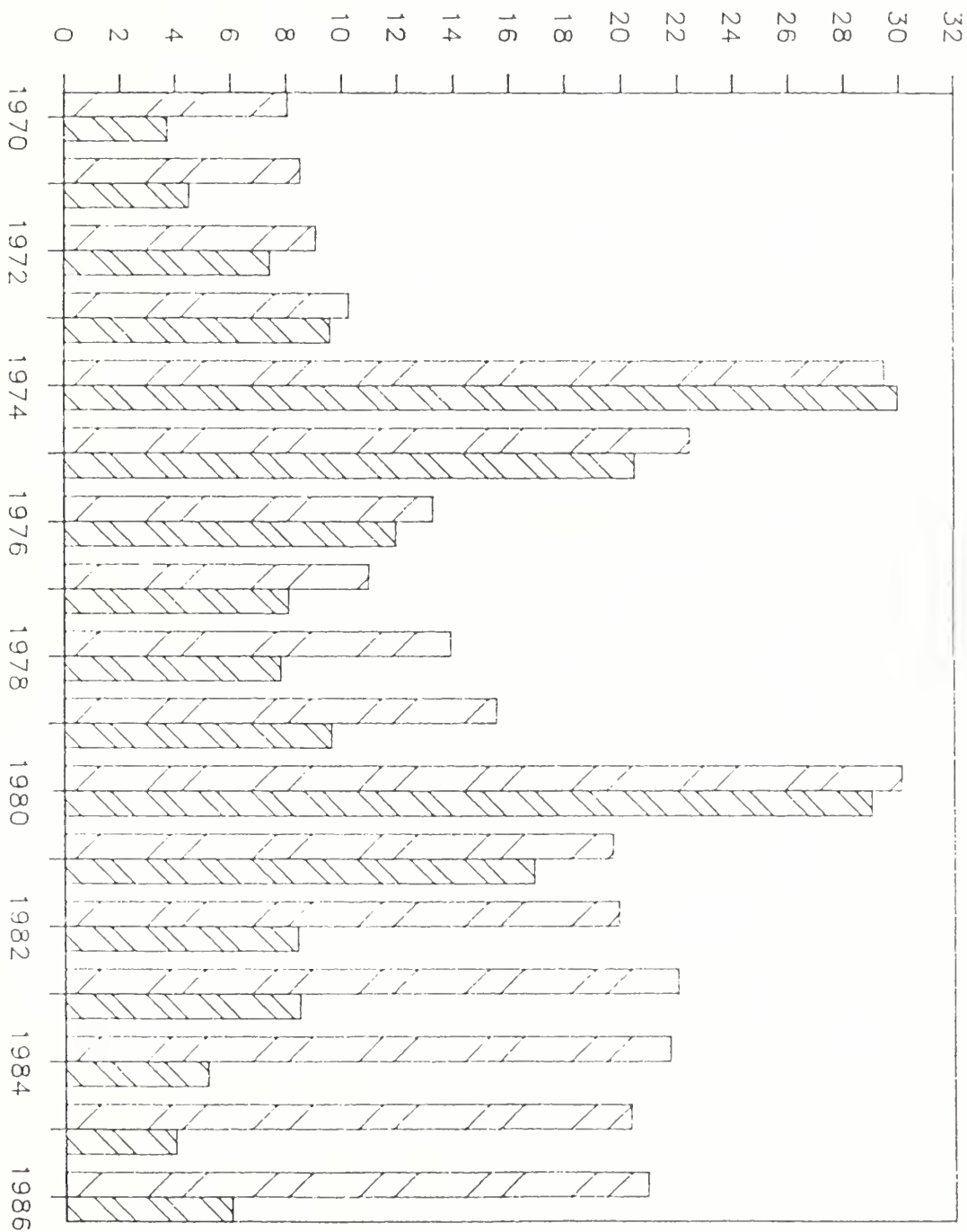
POUNDS

Source: USDA

US CENTS PER POUND

AVERAGE US & WORLD PRICES

1970 THRU 1986

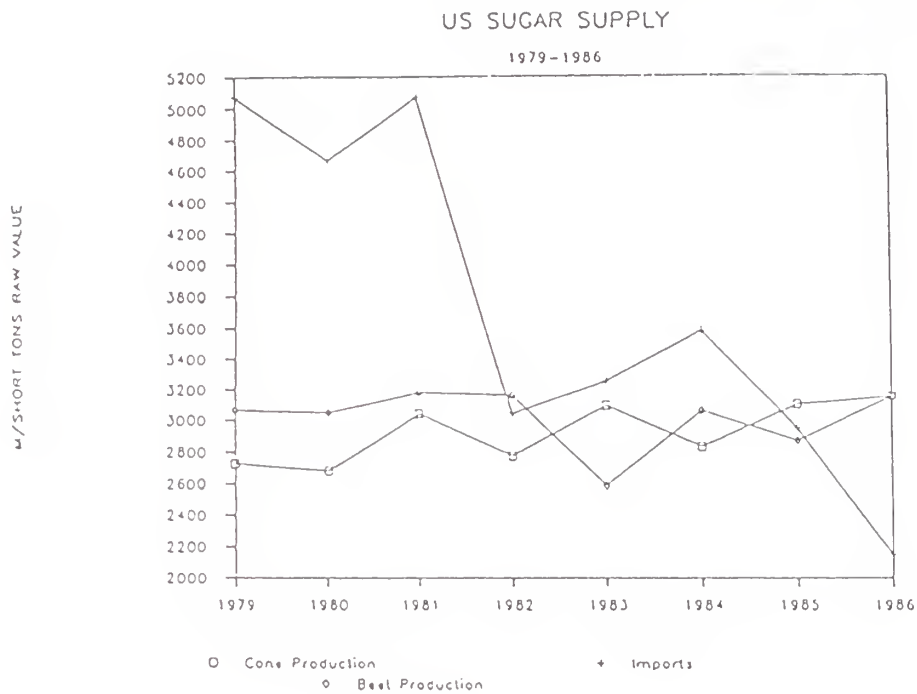
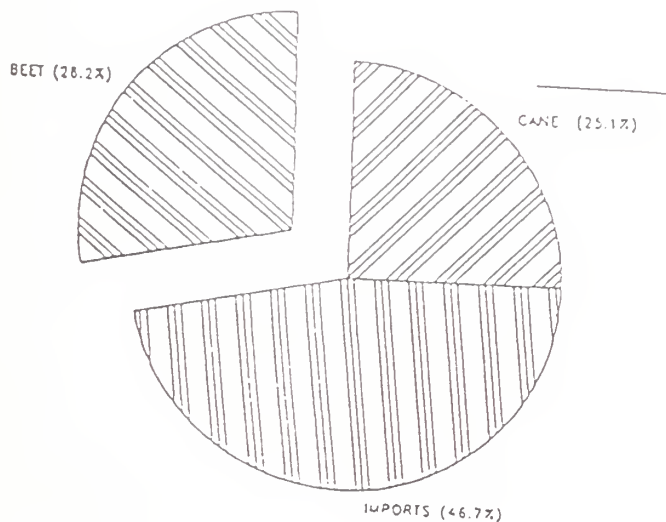
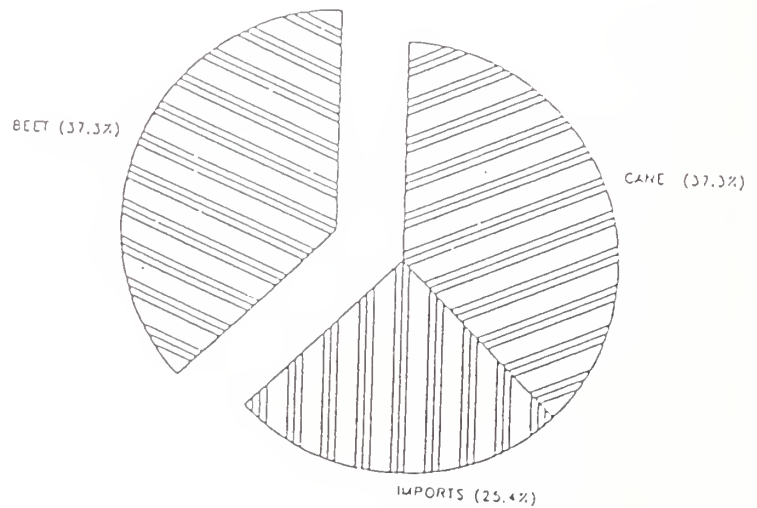


Source: USDA

DOMESTIC

WORLD

TABLE 2

US SUGAR SUPPLY
1979US SUGAR SUPPLY
1986

Source: USDA

TABLE 4

IMPORTS INTO THE UNITED STATES

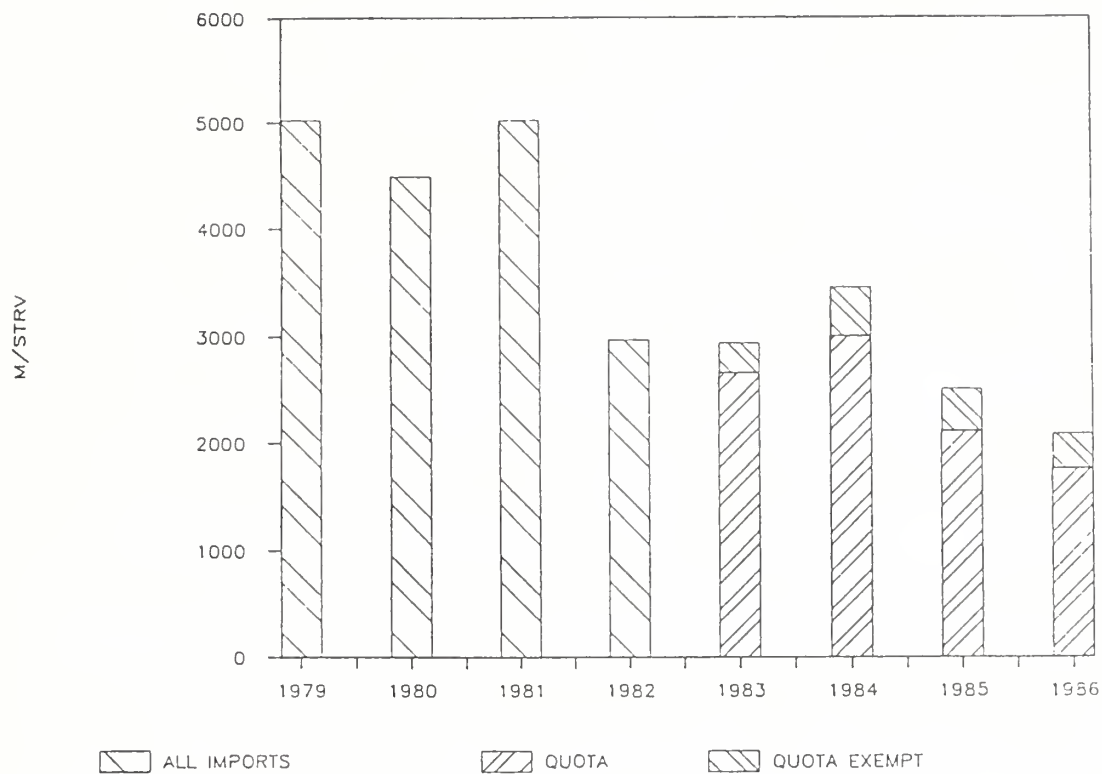


TABLE 5

REVENUE FROM SUGAR SALES TO US

FROM LATIN AMERICA

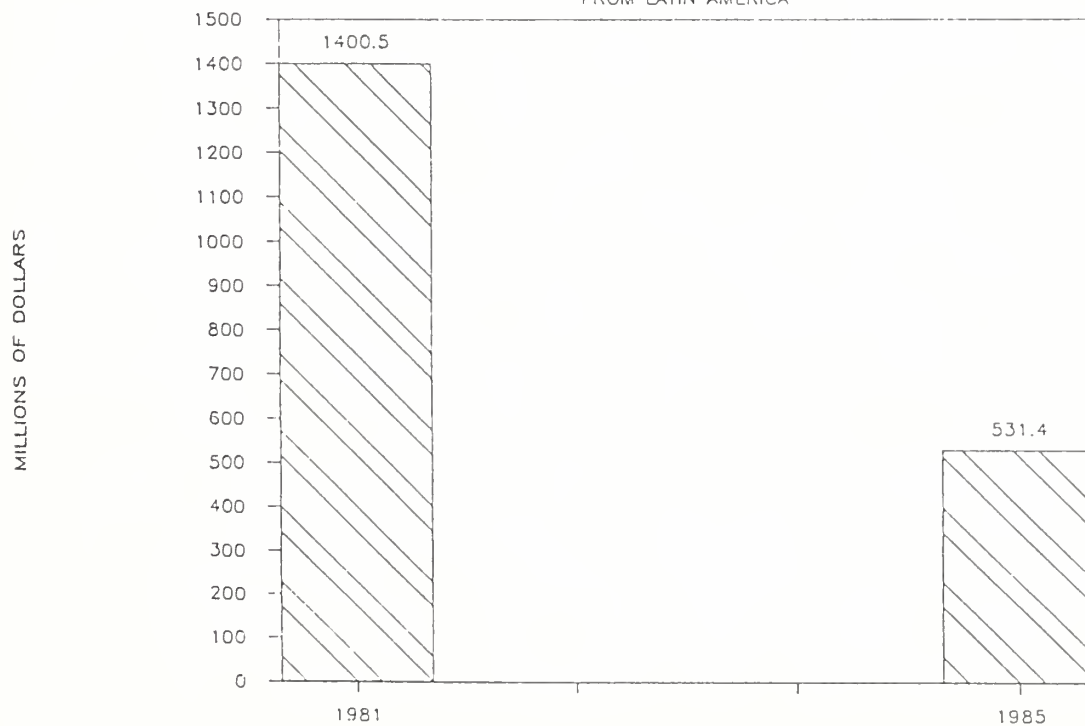


TABLE 6

US SUGAR BALANCE AND QUOTA CALCULATION
1986 - 1987
M/STRV

OPENING STOCKS	1406	
SUPPLY		
PRODUCTION:		
BEET SUGAR	3250	
CANE SUGAR	3150	
QUOTA EXEMPT RECEIPTS	<u>400</u>	
CLOSING STOCKS (20% OF CONSUMPTION)	<u>(1647)</u>	
SUPPLY AVAILABLE		<u>6559</u>
DEMAND		
DELIVERIES	7750	
QUOTA EXEMPT	400	
MISCELLANEOUS & ADJUSTMENTS	<u>97</u>	
TOTAL DEMAND		<u>8247</u>
QUOTA		<u>1688</u> ----

SOURCE: USDA, Refined Sugars Inc. Estimates

ANNUAL AGRICULTURAL OUTLOOK CONFERENCE

United States Department of Agriculture
Washington, D.C.



CORN SWEETENERS

E. Raymond Stanhope
Vice President/Human Resources & Government Relations
Staley Continental

I consider my participation on the program as something very special - for two reasons. First, I have never had the opportunity to take an active role in the program before. A program that has a long and esteemed record. Secondly, I consider my participation in the Outlook Conference an important and explicit recognition of the role that corn sweeteners play in the U.S. sweetener situation.

Corn sweeteners, in the form of corn syrup, have been with the U.S. for a long time. Since the advent of high fructose corn syrup, corn sweeteners have obtained a higher level of significance. Today corn sweeteners account for more than half of the caloric sweeteners consumed in the U.S.A. The evolution of corn sweeteners, from a small portion of the U.S. sweetener scene to that of the primary sweetener used in the U.S., has important significance in today's agriculture.

The current level of corn sweetener usage in the U.S. is the result of applied new technology. If it weren't for the knowledge of how to use technology in a large industrial state, the ability to produce sweeteners from corn at an economical cost would not have developed. Yet, today, because of this technology and its application, the reality exists. And once the reality exists, it must be dealt with in the economic realities of the world.

The greatest growth in the use of corn sweeteners since the development of HFCS has been in the area of soft drinks. This occurred because corn sweeteners (HFCS) are produced at a cost that is competitive with sucrose produced from cane and beet. In fact, corn sweeteners can be produced at a cost that is competitive with any sucrose produced from cane and beet produced in the world. To date, due to factors I will mention later, corn sweetener competitiveness has been largely limited to the U.S. where they accounted for 51 percent of sweetener usage in 1985 and 52 percent in 1986.

In the U.S. market, liquid corn sweeteners have nearly reached their maximum potential. Liquid corn sweeteners are at present almost exclusively used as the sweetening agent in soft drinks. They have essentially reached their limit in other markets such as confectionary and baking. Some increased usage could still occur in canning and processed foods. As a result, the growth in demand for liquid corn sweeteners is expected to slow from the rapid growth of the seventy's and early 1980's. Demand for today's major liquid corn sweeteners is expected to grow at a rate closely related to the total growth of all caloric sweeteners.

However, this is not expected to be the case for the new corn sweetener product - crystalline fructose, which will be in commercial production in the first half of 1987. We expect the usage of that product will grow at a faster rate. Even so, it will be several years before crystalline fructose usage reaches its full potential. As with any new product, it will take time for crystalline fructose to find the product uses that work best with the product. One of the features of crystalline fructose is its sweetness. As a sugar, fructose is significantly sweeter than sucrose on a pound for pound basis. It also enhances the flavor of fruit based products and preserves the cellular structure of frozen fruits. We feel that as a result of its characteristics, it will find a good market in industrial uses of caloric sweeteners. Due to the fact that there are no recipes for the housewife for the use of crystalline fructose, it will take longer for this product to find a ready market in home cooking.

The introduction of crystalline fructose will have only a modest effect on U.S. sucrose consumption over the next five years. In 1991 we expect the consumption of sucrose to be near its current level as the growth in demand due to population and income offset the increased use of crystalline fructose.

The question of the quantity of sucrose imports needed annually, then largely comes down to a question of the quantity of sucrose produced in the U.S. This year we have seen the U.S. sucrose crop increase by 5.5 percent. Obviously, if domestic production increases at that rate for the next five years, the need to import sucrose would disappear.

Most of the production increase this year occurred in beet sucrose. I doubt that domestic sucrose production will increase significantly over the next five years.

However, given improved beet storage practices and increased use of crystalline fructose, it is very likely that U.S. import needs will not increase over the next five years. Assuming domestic sucrose production remains at the 1986 level, I would project 1991 U.S. sucrose import requirements to be in the range of 1.5 million short tons.

Now I would like to turn our attention to the world situation and look at the role of corn sweeteners in that arena.

In the arena of corn sweeteners, when you shift from the U.S. situation to the world situation, one finds an entirely different environment. The contrast is no less than that of day and night. The openness to change is markedly less outside the U.S.A. The world outside the U.S. is markedly less open to new products than we are. Machiavelli caught the essence of this in The Prince, first published in 1513. I quote, "It must be remembered that there is nothing more difficult to plan, more doubtful of success, nor more dangerous to manage than the creation of a new system (read product). For the initiator has the enmity of all who would profit by the preservation of the old institution (read product) and merely lukewarm defenders in those who would gain by the new ones (read products)."

That explains a lot about what has happened and today is happening with regard to corn sweeteners outside the U.S. It is sad that that is the case. But, when you look at the record, the words of Machiavelli are as relevant to corn sweeteners today as they were to his Prince in his day.

The usage of corn sweeteners in the world outside the U.S. is very modest compared to usage within the U.S. Today corn sweetener usage outside the U.S. totals an estimated 4.0 million metric tons, 50% of that consumed in the U.S. That demand is expected to grow slowly over the next several years. Corn sweetener usage in the rest of the world has grown from 2.0 million metric tons in 1976/77. Unless the economic climate for sucrose or Government's policies change dramatically, we expect corn sweetener usage outside the U.S., over the next several years, will grow at the rate of five percent per year or less.

The primary reason for the poor prospects for corn sweeteners growth is the action of governments. Simply stated, corn sweeteners are not allowed to compete with the traditional sweeteners. In many countries where corn sweeteners are produced, their production is limited by production quotas. This is true in the EEC, Japan, and Argentina. In Argentina restrictive production quotas were placed on corn sweeteners just a year ago. Upon entering the EEC, quotas were imposed on the production of corn sweeteners in Spain. Until such policies are changed, the prospects for substantial growth for corn sweetener production and, thereby, the corn to produce it, are dim.

The basic reason for the governmental actions to limit corn sweetener production rests in the fact that the commercial production of HFCS at a competitive price is a relatively recent phenomenon. Traditional producers are concerned, and turn to their governments to protect them. Governments, being what they are, are willing to preserve the status quo rather than prepare us for the future. In this regard, corn sweeteners represent but one of a host of new products that are the product of new technology. New technology that forces change and the adjustments that come with change. One of the greatest challenges the world faces today is that of adjusting to the change that technology places at our doorstep. We see it all around us in agriculture. It is present in grains, dairy, and fruits and vegetables, as well as sweeteners.

There is a door of opportunity in the upcoming MIN negotiations under the GATT to allow the benefits of technology to reach a greater world population sooner. We can do that by enhancing the operation of the forces of the marketplace and diminish the barriers placed in the way by protectionist government policy. The ramification of such a result in benefits would be substantial. Most people give a sympathetic ear to the idea of substantially reducing governmental intervention in markets, and then say it is impossible. I say it is necessary and the necessary will overcome the impossible.

In the case of corn sweeteners, if governments could be persuaded to forego interventionist practices, the results would be dramatic. Given the freedom to compete on an equal footing with traditional sweeteners, we estimate that there would be a world demand for an additional 80 million tons of corn. That is an amount equal to 47 percent of the domestic usage of corn in the U.S. this past marketing year. This estimate is based on the following assumptions.

First, without government intervention in the sweetener markets of the World, essentially all of the soft drinks would be sweetened with corn sweeteners. That would, by the year 2000, increase corn sweetener consumption by the equivalent of thirteen million metric tons of corn. Second, that corn sweetener usage, excluding soft drinks, would be related to the per capita income. In countries with a per capita income of \$5000 per capita or higher, the consumption would be equal to that in the U.S. - thirty percent of sweetener consumption excluding soft drinks. Corn sweetener consumption would be less in countries of lower per capita income. In countries of \$500 per capita or less, corn sweetener consumption would be five percent of sweetener consumption excluding soft drinks. On the basis of the second assumption, the usage of corn sweeteners by 2000 would be the equivalent of 69 million metric tons of corn.

To achieve this substantial increase in the usage for corn requires that the governments of the world allow corn sweeteners to compete in the market with the other crop-based sweeteners. Unless the world's governments discontinue both their intervention in the world sucrose market and, severe limitation of the production of corn sweeteners within their borders, the increase in corn sweetener production in the world will grow at a much slower pace. In the nine year period from 1976/77 to 1984/85, corn sweetener production increased by 5.2 million metric tons - 8.7 million metric tons of corn. Thirty-one percent of that growth occurred outside the U.S. With continued government intervention around the world, by the year 2000 the increase in corn sweetener production is expected to increase by 10.9 million metric tons from the 1984/85 base - the equivalent of 18.3 million tons of corn. Thus, the corn producers of the world, particularly those in the U.S., have a large stake in removing world governments from the world sweetener markets.

U.S. producers of corn and other agricultural products have another reason to see world governments removed from the world sweetener market. The world sweetener market is probably the most heavily impacted by government intervention of all agricultural commodities. Today we see government intervention growing in the markets for other agricultural products. If this trend is not stopped, the world markets for other agricultural products could become like the world market for sweeteners is now and world prices could dip to levels of thirty percent of the world's average cost of production, as it did last year for sucrose. That would result in world market corn prices of sixty-five cents per bushel, and ninety cents per bushel for wheat. That is a prospect that would make the world market for those products a traversery, as it is today for sweeteners.

If we can start to remove the world governments from intervening in the world sugar market and the market for other commodities, then we can avoid such an economic traversery. It is important for all agricultural commodities to see that we start that process in the upcoming MIN negotiations. In these negotiations, it is important that we start the process of reestablishing the viability of world agricultural markets reestablishing cost as a major determinant of price.

Failing that, we face the prospect of observing more and more agricultural products markets deteriorating to that of the world sugar market today. It is in the interest of all efficient agricultural producers that such failure not occur. We must find a way, for the benefit of today's, and tomorrow's generations to thwart the impact of government intervention and allow the world markets for agricultural products to function freely and efficiently. We all have much at stake. I invite you all to contribute what you can to freeing world agricultural markets from governmental intervention. We have a lot to do to accomplish this and not much time.



NUTRASWEET'S PERSPECTIVES ON
"THE OUTLOOK FOR ALTERNATIVE SWEETENERS"

REMARKS PREPARED FOR PRESENTATION BY
KEVIN KRAIL, DIRECTOR, SALES
THE NUTRASWEET COMPANY

GOOD AFTERNOON. ON BEHALF OF THE NUTRASWEET COMPANY, I AM DELIGHTED TO BE PARTICIPATING IN THIS AFTERNOON'S WORKSHOP, CONTRIBUTING OUR VIEWPOINT ON THE OUTLOOK FOR ALTERNATIVE SWEETENERS IN THE U.S.

IN A WORD, WE FEEL OPTIMISTIC ABOUT THE FUTURE. RECENT DEVELOPMENTS HAVE TAKEN PLACE AND HOPEFULLY WILL CONTINUE TO OCCUR IN LOW CALORIE ALTERNATIVE SWEETENERS THAT ARE AN IMPORTANT ELEMENT IN THE REVIVAL AND CONTINUED GROWTH OF MANY FOOD AND BEVERAGE CATEGORIES.

THE REASON FOR THIS IS SIMPLE. MAN HAS A HISTORY OF PREFERRING THINGS THAT TASTE SWEET. AMERICANS FOR THE MOST PART, SATISFY THEIR DESIRE FOR SWEETS WITH INGREDIENTS CONTAINING CALORIES AND CARBOHYDRATES.

TODAY'S ENVIRONMENT SHOWS A CHANGE ON THE PART OF THE AMERICAN CONSUMER. MILLIONS OF PEOPLE, EITHER BY CHOICE OR NECESSITY, ARE RESTRICTING THEIR INTAKE OF CALORIES AND CARBOHYDRATES. CONTROLLING CALORIC AND CARBOHYDRATE INTAKE STEMS FROM TWO BASIC NEEDS - MEDICAL AND COSMETIC. RESTRICTION OF SUGAR IS PARTICULARLY IMPORTANT TO THE OVER 11 MILLION DIABETICS IN AMERICA AS WELL AS THE MILLIONS OF AMERICANS WHO ARE MAKING AN EFFORT TO CONTROL THEIR WEIGHT (DIET). FOR ALL AMERICANS, HEALTH PROFESSIONALS CONTINUE TO STRESS THE IMPORTANCE OF SOUND NUTRITION AND HEALTHY LIFESTYLES.

THE EFFECTIVENESS OF LOW CALORIE FOODS AND BEVERAGES IN HELPING PEOPLE TO CONTROL WEIGHT - WITHOUT SACRIFICING TASTE, VARIETY, AND NUTRITION IS BEING INCREASINGLY RECOGNIZED. IN AN OPINION SURVEY CONDUCTED BY SELF MAGAZINE, 54% OF AMERICAN WOMEN SAY THAT HAVE DIETED IN THE PAST 12 MONTHS. IN A RECENT STUDY BY YANKELOVICH, SKELLY AND WHITE, MORE THAN 80 MILLION AMERICANS SAID THEY ARE ON DIETS.

AMERICANS ARE WAGING A NEW CAMPAIGN FOR FREEDOM IN THE SUPERMARKETS. THEY WANT LIBERATION FROM THE PERCEIVED HIGH LEVELS OF SODIUM, CAFFEINE, FAT, CHOLESTEROL AND SUGAR IN THE FOODS THEY EAT.

THERE IS A NEW EMPHASIS ON "LOW" AND "LITE" AND "LOW SODIUM" AND "SUGAR-FREE AND "HIGH-FIBER". THE MOVEMENT HAS BEEN BUILDING FOR SEVERAL YEARS. IN THE BEGINNING SOME SAW THE MOVEMENT AS ONLY A FAD. BUT INTEREST IS FAR FROM FADING.

IN FACT, IT SEEMS TO BE AT AN ALL TIME HIGH. WITNESS THE AMERICAN CANCER SOCIETY'S ENDORSEMENT OF LOW FAT, HIGH-FIBER DIET OR THE RECENT GROWTH RATES IN DIET CARBONATED SOFT DRINKS.

CONTRIBUTING TO NEW FOOD AND BEVERAGE CHOICES ARE THE USE OF ALTERNATIVE, LOW CALORIE SWEETENERS.

I WANT TO ADDRESS THIS SWEETENER MARKET FROM THE PERSPECTIVE OF ALTERNATIVE SWEETENERS, NOT FROM THE VIEWPOINT OF AN ARTIFICIAL SWEETENER AS SUGGESTED BY YOUR PRINTED PROGRAM.

NUTRASWEET/ASPARTAME IS NOT CLASSIFIED BY THE FDA AS AN ARTIFICIAL SWEETENER, BUT RATHER AS A NUTRITIVE SWEETENER, JUST LIKE SUGAR. OUR BODIES METABOLIZE BOTH NUTRASWEET AND SUGAR NATURALLY. OTHER SWEETENER ALTERNATIVES -- SACCHARIN, CYCLAMATE, OR ACESULFAME-K -- ARE APPROPRIATELY LABELED ARTIFICIAL, NOT NUTRASWEET.

HISTORICALLY, LOW CALORIE FOOD AND BEVERAGE PRODUCTS HAVE BEEN ALMOST ENTIRELY DEPENDENT UPON SACCHARIN. SACCHARIN WAS DISCOVERED IN 1879 AND WAS USED COMMERCIALY AS EARLY AS 1910. THE REAL IMPETUS FOR ITS WIDESPREAD USE WAS PROVIDED BY THE TWO WORLD WARS - WHEN SUGAR SUPPLIES WERE RATIONED OR CUT OFF COMPLETELY. TODAY, SACCHARIN IS USED THROUGHOUT THE WORLD; IT IS APPROVED FOR A VARIETY OF FOOD AND BEVERAGE USES IN MORE THAN 80 COUNTRIES. THE SWEETENER, WHICH HAS 300 TIMES THE POTENCY OF SUCROSE, BECAME THE OBJECT OF A PROPOSED FDA BAN IN 1977, LARGELY BASED ON CANADIAN STUDIES SHOWING BLADDER TUMORS BEING FOUND IN SOME MALE RATS FED HIGH DOSES OF SACCHARIN. SACCHARIN CONTINUES TO BE AVAILABLE IN THE U.S. UNDER THE PROVISIONS OF A CONGRESSIONAL MORATORIUM; THE MORATORIUM HAS BEEN EXTENDED FOUR TIMES, MOST RECENTLY TO MAY 1, 1987.

CYCLAMATE, 30 TIMES SWEETER THAN SUCROSE, WAS COMMERCIALY MARKETING BEGINNING IN 1949. THERE WAS A RAPID INCREASE IN CYCLAMATE USE DURING THE 1960'S WHEN, USED IN COMBINATION WITH SACCHARIN, IT WAS FORMULATED INTO DIET SOFT DRINKS. IN 1969, THE FDA BANNED ITS USE IN FOODS AND BEVERAGES, IMPLICATING CYCLAMATE AS A POSSIBLE CANCER CAUSING AGENT IN RATS. AT THE TIME IT WAS EXPECTED THAT CYCLAMATE WOULD BE RECLASSIFIED AS AN OVER-THE-COUNTER DRUG AND THUS BE AVAILABLE TO A LIMITED EXTENT

IN 1970, HOWEVER, CYCLAMATE WAS TAKEN OFF THE MARKET COMPLETELY. THE CALORIE CONTROL COUNCIL AND ABBOTT LABORATORIES HAVE JOINTLY SUBMITTED A FOOD ADDITIVE PETITION SEEKING ITS REAPPROVAL. CYCLAMATE IS USED IN FOOD AND BEVERAGES IN OTHER PARTS OF THE WORLD WITH APPROVALS IN OVER 40 COUNTRIES.

ACESULFAME-K, 200 TIMES SWEETER THAN SUGAR, IS MANUFACTURED BY HOECHST. A U.S. PETITION WAS FILED IN 1982 AND SENT BACK TO THE MANUFACTURER IN 1985 FOR FURTHER WORK. SINCE THAT TIME, VERY LITTLE HAS BEEN REPORTED ON ACE-K'S STATUS. THE PRODUCT IS APPROVED FOR SOME USES IN OVER A DOZEN COUNTRIES, INCLUDING THE U.K., SWITZERLAND, SOUTH AFRICA AND DENMARK. IT IS PRIMARILY BEING USED IN TABLETOP SWEETENERS. ACE-K TASTES SIMILAR TO SACCHARIN.

ALITAME IS A DIPEPTIDE SWEETENER THAT PFIZER HAS BEEN DEVELOPING FOR SEVERAL YEARS AND JUST RECENTLY ANNOUNCED THAT IT HAD PETITIONED THE FDA FOR APPROVAL IN THE U.S. THE SWEETENER IS EXCEEDINGLY SWEET -- 2000 TIMES SWEETER THAN SUGAR. LITTLE ELSE IS KNOWN ABOUT THE PRODUCT.

NOW FOR THE SUBJECT I KNOW BEST: NUTRASWEET.

A WORD OR TWO ABOUT NUTRASWEET AND THE NUTRASWEET COMPANY, SO THAT YOU WILL UNDERSTAND MY PERSPECTIVES. THE NUTRASWEET COMPANY WAS FORMED ON JANUARY 1, 1986, BY MERGING WHAT WAS PREVIOUSLY G. D. SEARLE'S NUTRASWEET GROUP WITH SEARLE'S EQUAL BUSINESS INTO A WHOLLY OWNED SUBSIDIARY OF THE MONSANTO COMPANY.

WE MAKE AND SELL TWO CLOSELY RELATED PRODUCTS:

NUTRASWEET IS OUR BRAND NAME FOR ASPARTAME, THE LOW-CALORIE NUTRITIVE SWEETENING INGREDIENT WHICH SEARLE RESEARCH DISCOVERED IN 1965. WE SELL NUTRASWEET TO FOOD AND BEVERAGE COMPANIES AS A SWEETENING INGREDIENT FOR THEIR PRODUCTS. NUTRASWEET WAS APPROVED IN THE U.S. FOR USE IN DRY FOODS IN 1981; FOR USE IN SOFT DRINKS, IN 1983, VITAMINS IN 1984 AND LAST TUESDAY, NOVEMBER 25, FOR USE IN FROZEN AND REFRIGERATED JUICE BEVERAGES, TEA BEVERAGES, FROZEN NOVELTIES ON A STICK AND BREATH MINTS.

EQUAL IS OUR BRAND OF TABLETOP SWEETENER CONTAINING ASPARTAME WHICH IS SOLD TO CONSUMERS IN THE UNITED STATES THROUGH GROCERIES, DRUG STORES, MASS MERCHANDISERS, AND INSTITUTIONAL OUTLETS.

NUTRASWEET IS A COMBINATION OF TWO AMINO ACIDS, HAS 4 CALORIES PER GRAM, AND IS APPROXIMATELY 200 TIMES SWEETER THAN SUGAR.

NUTRASWEET HAS BEEN EXTENSIVELY STUDIED IN ANIMALS AND HUMANS OVER THE PAST TWO DECADES. THESE STUDIES PROVIDE COMPLETE EVIDENCE THAT CONSUMPTION OF THE SWEETENER IS NO MORE HAZARDOUS THAN EATING PROTEIN IN THE DIET. PRODUCTS IN THE U.S. CONTAINING NUTRASWEET MUST CARRY AN INFORMATION LABEL FOR PEOPLE WITH A RARE GENETIC CONDITION, PHENYLKETONURIA, WHO MUST RESTRICT THEIR INTAKE OF PHENYLALANINE, ONE OF THE AMINO ACIDS PRESENT IN THE SWEETENER.

WE HAVE FACED MANY CRITICS ON THE ROAD TO APPROVAL AND THEY HAVE CONTINUED TO QUESTION THE ABSOLUTE SAFETY OF OUR PRODUCT IN THE FACE OF OVERWHELMING REGULATORY, PROFESSIONAL AND CONSUMER APPROVAL AND ACCEPTANCE.

OUR MAJOR ENDORSEMENTS HAVE BEEN

FDA

COUNCIL OF SCIENTIFIC AFFAIRS - AMA

ADA

WORLD HEALTH ORGANIZATION

APPROVAL IN FOOD AND BEVERAGE CATEGORIES IN OVER 50
COUNTRIES AROUND THE WORLD.

UNANIMOUSLY AND WITHOUT A SINGLE EXCEPTION, EACH OF THESE
BODIES HAS COME TO THE SAME CONCLUSION: IT'S SAFE. PERIOD.

AND THESE ARE NOT FOLKS WHO ARE TERRIBLY PROMISCUOUS ABOUT
APPROVING SWEETENERS. AS PREVIOUSLY MENTIONED, THE US FDA
BANNED CYCLAMATE AND TRIED TO BAN SACCHARIN; ASPARTAME IS THE
ONLY LOW-CALORIE SWEETENER THE FDA HAS EVER APPROVED.

JAPAN NEVER APPROVED SACCHARIN OR CYCLAMATE IN THE FIRST
PLACE. ASPARTAME IS THE ONLY LOW-CALORIE SWEETENER -- AND ONE
OF THE FEW FOOD ADDITIVES IN GENERAL -- THAT JAPAN HAS EVER
APPROVED.

ASPARTAME IS THE ONLY LOW-CALORIE SWEETENER ALLOWED TO BE USED
IN FOODS AND BEVERAGES IN CANADA.

FROM A SCIENTIFIC STANDPOINT, WHAT IS REMARKABLE ABOUT
ASPARTAME IS NOT CONTROVERSY -- IT IS CONSENSUS.

NUTRASWEET HAS HAD A DRAMATIC IMPACT IN THE CATEGORIES IT IS PRESENT. IT HAS ALMOST PROVEN TO BE REVOLUTIONARY. WHY?

BECAUSE THE CHARACTERISTICS OF NUTRASWEET EXACTLY MATCH THE CHARACTERISTICS OF THE MARKETPLACE. IT DELIVERS WHAT CONSUMERS WANT. GREAT TASTE, LOW CALORIES, SAFE AND NO TOOTH DECAY.

SUGAR TASTES TERRIFIC. IT IS THE GOLD STANDARD. NUTRASWEET TASTES JUST LIKE SUGAR. IN A RECENT STUDY, 70% OF THOSE SURVEYED COULDN'T DISTINGUISH BETWEEN NUTRASWEET AND SUGAR IN MOST APPLICATIONS.

WE THINK IT IS REALISTIC TO EXPECT CONTINUED GROWTH IN THE NUTRASWEET SHARE OF THE SWEETNESS MARKET IN THE INDUSTRIALIZED WORLD BECAUSE OF THE PRODUCT'S CHARACTERISTICS.

TO BE A SUCCESSFUL ALTERNATIVE SWEETENER YOU MUST HAVE TASTE, LOW CALORIE AND SAFE ON YOUR SIDE.

SOME EXAMPLES OF THE IMPACT NUTRASWEET HAS HAD:

TABLETOP:

IN 1982, AS EQUAL WAS BEING TEST-MARKETED, THE TABLETOP SWEETENER MARKET AS MEASURED BY NIELSEN WAS ABOUT \$110 MILLION AT WHOLESALE, TOTALLY DOMINATED BY SWEET N LOW, AN EXTREMELY STRONG BRAND THAT WAS VIRTUALLY SYNONYMOUS WITH THE CATEGORY ITSELF.

EQUAL DOUBLED THE MARKET SIZE AND CAPTURED 58% OF ITS DOLLAR SHARE IN THREE YEARS. OUR SALES ARE 25% LARGER THAN THE WHOLE MARKET WAS THREE YEARS AGO. AND, SACCHARIN STILL HAS A SIGNIFICANT PRESENCE IN THIS MARKET.

CSD VOLUME GROWTH

CARBONATED SOFT DRINKS REPRESENT ABOUT \$30 BILLION IN RETAIL SALES. HERE, TOO, THE CATEGORY HAD SHOWN LITTLE GROWTH FOR OVER A DECADE.

INTERESTINGLY, THE MOST DYNAMIC SEGMENT OF THIS CATEGORY WAS THE SO-CALLED "DIET" SEGMENT THAT HAD GROWN ABOUT 3 SHARE POINTS IN 15 YEARS.

STARTING WITH THE 1983 INTRODUCTION OF NUTRASWEET INTO SOFT DRINKS, THAT SEGMENT HAS GROWN ABOUT 6 SHARE POINTS. IN LESS THAN THREE YEARS, THE SEGMENT HAS DOUBLED ITS GROWTH OVER THAT EXPERIENCED IN THE PREVIOUS DECADE AND A HALF.

RIGHT NOW, THE SUGAR-FREE -- NOT DIET, SUGAR FREE -- SEGMENT IS GROWING AT ABOUT 4 TIMES THE RATE OF THE SUGAR-SWEETENED SEGMENT. THAT SUGGESTS MAJOR SHARE GAINS FOR THE FUTURE.

CURRENTLY AT 25%, INDUSTRY EXPERTS PREDICT THAT THE SUGAR-FREE SEGMENT WILL GROW TO OVER 40% BY THE 1990'S

NOW LET ME TELL YOU WHERE WE THINK WE'RE HEADED. WE MADE A HIGH-RISK DECISION FOUR YEARS AGO TO MARKET NUTRASWEET AS A BRAND. WE TRADEMARKED OUR UNIQUE INGREDIENT. WE INVESTED TO BUILD BRAND PREFERENCE WITH CONSUMERS. AND WE CREATED COMMERCIAL AND CONTRACTUAL INCENTIVES TO ENSURE IDENTIFICATION OF NUTRASWEET ON PACKAGES AND IN ADVERTISING. TODAY, OUR CONSUMER FRANCHISE IS WELL ESTABLISHED AND GROWING. TODAY TOTAL NUTRASWEET AWARENESS IS 99%.

TRIAL OF PRODUCTS CONTAINING NUTRASWEET HAS CLIMBED EVERY YEAR. 75% OF THE PUBLIC HAVE TRIED NUTRASWEET AND THREE-QUARTERS OF THEM ARE REPEAT USERS.

BUT THESE KIND OF STATISTICS DIDN'T COME EASY OR CHEAP. IN BUILDING A FRANCHISE AND BRINGING NUTRASWEET TO MARKET, WE'VE PUT HALF A BILLION DOLLARS INTO THE PRODUCT SINCE 1968. TWO HUNDRED MILLION OF THAT WAS IN ADVERTISING AND PROMOTION. WE'VE PUT ANOTHER \$200 MILLION DOLLARS IN PLANT AND EQUIPMENT TO SATISFY THE GROWING DEMAND FOR NUTRASWEET. WE'RE CONTINUING TO SPEND TO IMPROVE THE PRODUCT AND REDUCE MANUFACTURING COSTS.

DO WE EXPECT COMPETITION FROM OTHER ALTERNATIVE SWEETENERS IN THE FUTURE? MOST CERTAINLY.

A NUMBER OF OTHER LOW-CALORIE SWEETENERS ARE ON THE HORIZON:

TO NAME A FEW:

ACESULFAME K

ALITAME

TGS - TRICHLOROGALACTO SUCROSE

THAUMATIN

L-SUGARS

STEVIOSIDE

IN GENERAL, DEVELOPMENT OF A NEW LOW-CALORIE SWEETENER INGREDIENT WILL COST MILLIONS OF DOLLARS IN DEVELOPMENT AND BE SUBJECTED TO YEARS OF REGULATORY SCRUTINY BEFORE IT IS APPROVED AND FINDS A MARKET. WE KNOW IT, WE'VE BEEN THERE.

WE WILL CONTINUE TO INVEST IN R&D TO FIND THE NEXT ASPARTAME. WE ARE NOW AND INTEND TO BE THE LEADING EDGE SWEETENER COMPANY.

WHAT ARE WE LOOKING AT FOR THE FUTURE CONSUMER PRODUCT INNOVATIONS THAT USE ALTERNATIVE SWEETENERS. WE CAN ONLY TALK FOR NUTRASWEET AND EVEN THEN CANNOT SAY VERY MUCH. IT IS EXTREMELY DIFFICULT FOR US TO TALK ABOUT NEW PRODUCT DEVELOPMENT WITHOUT INFRINGING ON THE TRUST AND CONFIDENTIALITY WE HAVE WITH OUR FOOD AND BEVERAGE CUSTOMERS. WHAT WE CAN TALK ABOUT ARE THE INNOVATIVE PRODUCT INTRODUCTIONS THAT HAVE ALREADY OCCURRED THROUGHOUT THE WORLD:

FROZEN POPSICLES, YOGURTS, FLAVORED MILKS, CANDIES, PIE FILLINGS, CREME FILLINGS, JUICE DRINKS, ASPETIC DRINKS AND SO ON.

IN THE UNITED STATES THE FDA IS CURRENTLY REVIEWING ADDITIONAL PETITIONS FOR NEW CATEGORY APPROVAL.

SO YOU CAN SEE THERE IS A FUTURE FOR ALTERNATIVE SWEETENERS. CONSUMERS ARE DEMANDING IT AND FOOD AND BEVERAGE COMPANIES ARE LISTENING. WITH INCREASED KNOWLEDGE ABOUT TASTE, SAFETY, AND TECHNOLOGY WE ARE ON THE VERGE OF HAVING AN EVEN WIDER VARIETY OF BETTER-TASTING LOW-CALORIE PRODUCTS.

ANNUAL AGRICULTURAL OUTLOOK CONFERENCE

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1987 OUTLOOK FOR TOBACCO

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Economic Research Service, USDA and
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Significant changes were made in the U.S. tobacco price support and production control program in 1986. Legislation was enacted in April that significantly changed the quota-setting procedure, price support levels, and no-net-cost assessments for burley and flue-cured tobacco.

The U.S. tobacco outlook for 1986/87 is highlighted by large but declining supplies of leaf and reduced demand for tobacco products. Even though U.S. prices are lower and the quality of this year's crop is relatively good despite some drought stress, exports may decline. Domestic use may increase such that it about offsets the decline in exports leaving total use about unchanged in 1986/87. U.S. production in 1986 is down about 21 percent from last year. The smaller production together with lower carryin stocks reduced supplies about 8 percent to 5 billion pounds.

The size of the 1987 crop will depend in part on USDA's decision on quotas, which must be made by December 15 for flue-cured, February 1 for burley and March 1 for other kinds. The basic quota for flue-cured may not change much and the burley quota could be down. However, the effective flue-cured quota will likely increase from the 1986 level and the burley effective quota may remain near the 1986 level because quota carryover is larger. The hike in effective quotas point to a larger crop next year if yields are average. However, production would be considerably lower than that of the 1970's and early 1980's. Prices in 1987 will be about the same as the 1986 prices but increased production would hike the value of the crop.

Cigarette Sales Declining

Cigarettes are the dominant product of the tobacco industry in the United States and most other countries. U.S. cigarette output may drop to 658 billion pieces this year, about 7 billion below 1985 and 78 billion below the record high in 1981. Cigarette consumption may fall about 2 percent after declining 1 percent in 1985. Consumption per person in the United States, 18 years and older, may drop by 95 cigarettes (about 5 packs of 20) from 3,370 to 3,275. This would be the lowest since 1944. During the 1970's, cigarette smokers shifted toward low-tar brands, however, there has been a reversal since 1981. Since 1981 the proportion has fallen, but it may have steadied at a little over one-half the average during the last four years.

Despite an increase in the smoking age population, total consumption of cigarettes is likely to decline again in 1987 and per capita consumption is also expected to decline. Price hikes because of increased manufacturers' costs and tax increases are primary among reasons for the expected decline in both total and per capita consumption. The Federal excise tax was temporarily increased from 8 to 16 cents a pack of 20 on January 1, 1983, the first increase since 1951. The 16-cent rate became permanent in the Consolidated Omnibus Budget Reconciliation Act of 1985 (the "Reconciliation Act"). A total of 18 states raised excise taxes in 1983 and 1984. Another 12 States raised taxes by an average of 6 cents in 1985 and 7 States raised excise taxes an average of 3.8 cents in 1986. State taxes now vary from 2 cents a pack in North Carolina to 31 cents in Washington. The combined city and State tax is 29 cents a pack in New York City and 43 cents in Chicago, Illinois. Further State tax increases will occur in 1987.

Wholesale cigarette prices rose in December 1985, and again in June this year. The June increase marked the eleventh hike since August, 1982. The hikes were the result of the doubling of the Federal excise tax and increases in manufacturers' costs. Retail cigarette prices jumped 51 percent from August, 1982 to October, 1986. However, the rate of increase in retail prices has slowed the last 3 years; they rose 7 percent from October, 1985 to October, 1986. Retail price hikes are likely to continue in 1987 at a 6 to 8 percent annual rate. This slower rate of increase together with increased sales of generic and value-priced cigarettes (priced 15 to 35 percent lower than standard brands) could cushion the drop in per capita use. Still, it could fall 3 percent or more.

Antismoking activity, including legislation, continues to affect the industry. Forty-one States now have laws that either prohibit smoking in certain places or segregate smokers and nonsmokers. Ten States regulate smoking in the workplace of both private and government employers. Also, a large number of towns and cities have some smoking restrictions. The U.S. Department of Health and Human Services and voluntary health agencies have stepped up efforts to discourage smoking. The cumulative effect of publicity and ordinances on smoking is uncertain, although it almost surely accounts for some of the downward trend in per capita consumption.

Beginning in October, 1985, warning labels on cigarette packages have consisted of four separate messages about the hazards of smoking rotated at about 3-months intervals. The warnings on cigarette packages are about 50 percent bigger than the ones they replaced.

The General Services Administration (GSA) proposed on May 22 a near-total ban on cigarette smoking in buildings it owns and leases. Under the plan cigarette, cigar, and pipe smoking would be banned in general office space, lobbies, hallways, restrooms, elevators, libraries and classrooms. Smoking would generally be permitted in private offices. The only smoking areas provided in the proposal would be special areas around vending machine and canteen areas. Final regulations are expected to be enacted in the near future.

In conjunction with a new health promotion program ordered by the U.S. Department of Defense, the Army, Navy, and Marines have initiated stringent smoking restrictions that apply to both military and civilian employees. Smoking is banned in Army vehicles and restricted in offices. It is also restricted in Navy and Marine offices, ships, and aircraft. Smoking is permitted only to the extent that it does not endanger life or property or risk impairing nonsmokers health.

Changes In Tobacco Per Cigarette Affect Total Use

Tobacco use in cigarettes remained relatively constant during the 1970's and in 1980 and 1981, despite the gain in cigarette output. For many years, manufacturers could economize in leaf use as they shifted to filtertip brands and used the whole leaf. Later, manufacturers began using various leaf expansion processes and in recent years have used more imported tobacco to stabilize costs.

U.S. cigarette manufacturers used an estimated 1,168 million pounds of tobacco (unstemmed processing weight) in cigarettes in 1985. This was a little above 1984 because leaf use per cigarette rose. This calendar year, with cigarette output declining, perhaps more than 1 percent, manufacturers are likely reducing their total tobacco use.

Manufacturers used on estimated 1.76 pounds of tobacco (unstemmed processing weight) per 1,000 cigarettes produced in 1985, about 3 percent above a year earlier but considerably below the levels of 10 to 15 years ago. Domestic flue-cured accounts for about 35 percent, burley 29 percent, and Maryland 2 percent. Foreign grown was 34 percent; fifteen years earlier, it was 14 percent.

Consumption of Other Tobacco Products Also Down

Large cigar consumption will likely decline about 4 percent to 3.1 billion in 1986. Production of little cigars--less than 3 pounds per 1,000--is falling sharply after a small decline in 1985. Large cigar consumption in 1987 will likely continue the decline that started in 1970.

Smoking tobacco consumption may have fallen to 24-1/2 million pounds in 1986, 9 percent below the previous year. Consumption of chewing tobacco has likely fallen about 3 percent. Both smoking and chewing consumption are likely to fall again in 1987.

Snuff consumption may have fallen 1 or 2 percent in 1986. Both moist and dry snuff consumption are down. Snuff consumption may fall again in 1987.

Snuff consumption has likely fallen in 1986 for the first time in about a decade. Snuff and chewing (termed smokeless tobacco) consumption is likely being reduced because of legislation enacted in April this year. The "Reconciliation Act" placed a 24-cent-a-pound excise tax on snuff and an

8-cent-a-pound tax on chewing tobacco that became effective on July 1, 1986, in addition to making the 16-cent-a-pack Federal excise tax on cigarettes permanent.

In February, the Comprehensive Smoking Tobacco Health Education Act of 1986 was enacted (P.L.99-252). The act requires three rotating warning labels on smokeless tobacco containers and in printed advertisements, except billboards, for the products beginning in late February 1987.

The warnings are:

- o This product may cause oral cancer.
- o This product may cause gum disease and tooth loss.
- o This product is not a safe alternative to cigarettes.

In print advertisements, circles and arrows will draw attention to the warning labels. Television and radio advertising of smokeless tobacco products was banned as of August 28, 1986.

World Situation

World tobacco production in 1986 is estimated at 6.56 million metric tons (farm sales weight), down 4 percent from the 1985 level. Total area for 1986 is estimated at 4.34 million hectares, down 2.3 percent. The lower 1986 production is largely due to reduced output in China, the United States, and Pakistan, where production fell by 9, 21, and 36 percent, respectively.

Of the cigarette tobacco types, compared with 1985, production of flue-cured and burley tobacco among the major producers was generally lower while all major Oriental tobacco producers saw production rise in 1986.

Flue-cured Tobacco Production in Selected Countries 1985 and 1986

	Estimated 1985	Forecast 1986	Change
	- - Metric tons - -		Pct.
Argentina	32,348	40,400	+25
Brazil	257,000	262,000	+2
Canada	86,600	68,963	-20
China	2,075,000	1,900,000	-9
India	109,400	102,600	-6
Indonesia	41,286	35,093	-15
Italy	44,847	35,000	-22
Japan	66,400	71,400	+8
Rep. of Korea	49,346	57,175	+16
Malawi	24,600	21,000	-15
Pakistan	35,500	27,950	-29
Thailand	38,764	38,100	-1
United States	362,995	293,248	-19
Zimbabwe	105,556	114,300	+8

World flue-cured production for 1986 is forecast at 3.46 million tons, down 7 percent from 1985. Countries where flue-cured production probably increased were: Argentina, Brazil, Zimbabwe, Japan, and the Republic of Korea. Production declines, however, particularly in the United States and China, overwhelmed the increases.

Estimates of world burley production place total output at 670,000 tons, or 4 percent below the 1985 level. This decline continues a trend from last year when production fell 10 percent from that of 1984. Mexico, with estimated production of 34,630 tons is the only major producer with any appreciable increase, with Japan and China showing moderate increases. Among the European Community producers', Greece and Italy indicate about the same production, while production in Spain is expected to be lower. Along with the United States, burley production in Brazil, Malawi, the Philippines, and Thailand is expected to decline in 1986.

Burley Tobacco Production in Selected Countries 1985 and 1986

	Estimated 1985	Forecast 1986	Change
	-- Metric tons --		Pct.
Brazil	42,000	41,000	-2
China	28,000	30,000	+7
Greece	30,341	30,550	--
Italy	50,773	50,500	--
Japan	20,500	21,300	+4
Rep. of Korea	26,331	26,475	--
Malawi	33,600	30,500	-9
Mexico	24,520	34,630	+41
Philippines	15,363	14,177	-8
Spain	30,660	28,390	-8
Thailand	16,681	10,852	-65
United States	260,057	196,923	-24

World Oriental tobacco production during 1986 is expected to rise to 954,562 tons, 3 percent above last year's production of 925,000 tons. As indicated, all major producers are expected to show increased production during 1986. Of interest are Turkey and Greece, the major suppliers to the U.S., where only slight production gains are expected because of growing stock levels.

Production of other types, including dark air-cured and dark fire-cured, used in cigars and chewing tobacco are expected to continue declining. For 1986, dark air-cured tobacco output is estimated at 198,900 tons, down 3 percent. Dark fire-cured production is expected to fall by as much as 14 percent to 66,000 tons from 76,000 tons in 1985.

World cigarette production during 1987 may reach 5,051 billion pieces, or 2 percent above this year's estimate of 4,948 billion pieces. Although consumption is stagnant in the United States and the European Community,

Oriental Tobacco Production in Selected Countries 1985 and 1986

	Estimated 1985	Forecast 1986	Change
	- - Metric tons - -		Pct.
Bulgaria	102,900	110,706	+8
Greece	117,750	119,250	+1
Italy	30,321	31,800	+5
Romania	22,088	29,500	+34
Turkey	175,697	180,000	+2
Yugoslavia	49,000	52,750	+8

increased consumption in China will keep annual production changes positive for the world. For 1986, China's cigarette production is forecast to rise by 7 to 3 percent above 1985 to around 1,270 billion pieces. For 1987, a conservative 4-percent increase will push China's production to 1,321 billion pieces. Despite China's continued annual growth, stagnant consumption among the industrialized nations should slow the increase in cigarette output in future years.

Cigarette Production in Selected Countries 1985 and 1986

	Estimated 1985	Forecast 1986	Change
	- - Metric tons - -		Pct.
Brazil	146.3	150.0	+3
Bulgaria	92.2	95.0	+3
China	1,180.0	1,270.0	+8
EC-12	652.6	655.0	--
Indonesia	106.7	110.0	+3
Japan	303.0	300.0	-1
United States	665.3	658.5	-1
USSR	380.0	385.0	+1

World leaf exports during 1984 and 1985 remained fairly constant at 1,426 million tons and 1,417 million tons, respectively. Leaf exports during 1986 are expected to reach 1,364 million tons, down 4 percent from last year's total. As shown below, leaf exports by the major exporting countries should remain at 1985 levels or fall moderately. The fall in exports by Greece and Brazil will be due to crop quality problems from the past season. The adjustment in exports from the United States is due to a recent change in industry practice where an increasing amount of U.S. leaf is being exported as a semi-processed manufactured tobacco product under the Customs categories "smoking tobacco in bulk" and "smoking tobacco, NEC." During the January-September 1986 period, exports of "smoking tobacco in bulk" totaled

18,072 tons, up 333 percent from 1985. Exports of "smoking tobacco, NEC" during the same 1986 period totaled 15,288 tons, a 48-percent increase over 1985. Although 1986 Zimbabwean exports are expected to remain near 1985 levels, during the next few years exports from that country could rise as flue-cured tobacco production is expanded.

Leaf Exports in Selected Countries 1984-1986

	1984	Estimated 1985	Forecast 1986
- - Metric tons - -			
United States	246,156	249,015	225,000
Brazil	182,438	200,000	170,000
Greece	98,840	84,885	85,000
Italy	96,796	85,013	85,000
Zimbabwe	86,666	98,625	99,500
India	80,687	64,400	71,000
Turkey	69,720	102,726	80,000
Bulgaria	61,500	62,000	62,000
Malawi	64,000	65,000	62,000
China	26,756	19,200	24,400

NOTE: World tobacco production totals are based on estimates as of June 1986. Tobacco production totals by country are based upon recent estimates of Agricultural Attaches and Agricultural Counselors overseas.

U.S. Tobacco Crop Smaller

Tobacco production is down this year because of smaller acreage and lower yields. Because of reduced support prices, flue-cured auction prices averaged 19-1/2 cents a pound lower than last year. Flue-cured cash receipts from the 1986 crop were down about 26 percent. However, no-net-cost assessments were reduced 22-1/2 cents a pound resulting in a 3-cent a pound increase in returns after assessments. But, because of reduced marketings, total returns after assessments were 14 percent lower in 1986.

As of November 1, the tobacco crop was forecast at 1.19 billion pounds, down 21 percent from a year earlier and the smallest since 1936. Total supplies for the 1986/87 marketing year are down about 8 percent, as both the carryin and the crop are smaller.

Price support levels for flue-cured tobacco were considerably lower in 1986, burley supports remained the same after a big reduction last year, and supports for most other types increased about 1 percent. Virginia sun-cured supports were reduced 3 cents a pound. Burley auctions opened November 24 with prices averaging a little lower than a year earlier. This follows a 28-cent-a-pound drop last year. Cash receipts from the 1986 burley crop will fall because of lower production.

At the beginning of the 1986/87 marketing year, grower cooperatives held 1.38 billion pounds (farm sales weight), down about 54 million pounds or 4 percent from a year earlier. However, unsold loan stocks of 1.1 billion pounds on November 1 were down about a fourth from a year earlier. The reduction came about because of special ("buyout") sales authorized by the new tobacco legislation and lower takings of burley and flue-cured by cooperatives last season.

The flue-cured auction season ended on November 19 with prices averaging \$1.52 a pound, about 19-1/2 cents a pound lower than last year. About 56 million pounds of tobacco were placed under loan, 76 million fewer than a year earlier and the lowest since 1974.

Government price support is mandatory for tobacco produced under marketing quotas. Support levels for 1987 have not been set. For 1987 and future years, the flue-cured and burley price support will be the level for the preceding year adjusted by changes in the 5-year moving average of prices (two-thirds weight) and changes in the cost of production index (one-third weight). Costs include general variable expenditures but exclude costs of land, quota, risk, overhead, management, marketing contributions, and other costs not directly related to the production of tobacco. The Secretary of Agriculture can set the price support between 65 and 100 percent of the calculated increase or decrease. For other types, maximum increases in support levels will continue to be based on the average of the parity index during the 3 previous years compared with 1959. But, loan associations can request reduced support levels if market conditions warrant.

Marketings from the 1986 flue-cured crop and unsold 1985 production were about 16 percent below last year's marketings. Together with the smaller carryover, flue-cured supplies for 1986/87 are about 9 percent below last season. The flue-cured effective quota was reduced by 10 percent this year. Because of excess production in 1985, 25 to 30 million pounds of 1985 crop tobacco were sold in 1986. Some growers likely have tobacco in excess of their 103 percent (amount of effective quota that can be marketed without penalty) this year. Leasing is not authorized during the marketing season, so such tobacco will have to be carried over on farms, because Stabilization or other firms have no provisions for receiving or processing this tobacco.

Under the acreage-poundage program, USDA is required to announce the national marketing quota for the 1987 crop of flue-cured by December 15, 1986. The 1986 basic quota was 728-1/2 million pounds, or about 190 million pounds below prospective domestic use. Supplies have declined each of the last 5 years, and represent about 2.9 years use. Because this season's marketings are below 1986's effective quota, the effective quota for 1987 will be higher than the basic quota.

The 1986/87 supply of burley tobacco is about 6 percent below last season. Carryover stocks on October 1 were 2 percent below a year ago because of the smaller 1985 crop. This year's crop dropped another 24 percent below last year's. Both acreage and yields were down 13 percent. USDA regulations allow the crop to be sold in bales, sheets, or hand-tied. Most of the crop will likely be sold in bales and sheets.

During the year ending September 30, 1986, burley disappearance totaled 576 million pounds, 3-1/2 percent above the previous year but 9 percent below 1979's record. Domestic use rose because of increased use of tobacco per cigarette and possibly some substitution of domestic for imported tobacco. Exports were down a little because ample supplies were available from other parts of the world and cigarette consumption is down in some major importing countries. Total use may change little in 1986/87 with both domestic use and exports remaining about the same. Domestic use may remain the same even though cigarette production is likely to decline.

Legislation relating to burley tobacco requires that the national quota be based on: 1) intended purchases by cigarette manufacturers, 2) average annual exports for the 3 preceding years, and 3) the amount of tobacco needed to attain the specified reserve stock level (15 percent of the effective quota or 50 million pounds of burley). USDA's discretion for setting the quota is limited to not more than 103 percent or less than 97 percent of the amount determined by manufacturer's needs and exports, and the reserve stock level. If a quota reduction is required, it is limited to a maximum 6 percent reduction. The basic quota may be reduced from a year ago but the effective quota could remain about the same.

Among other types of tobacco, supplies of fire-cured, Maryland, dark air-cured, and cigar tobacco are all down.

Producer referendums will be held in early 1987 to determine if growers of Ohio cigar filler and Wisconsin cigar binder tobacco desire acreage allotments for their next three crops. Maryland, Pennsylvania filler (type 41) and cigar binder (types 51-52) voted against quotas in previous referenda.

ANNUAL AGRICULTURAL OUTLOOK CONFERENCE

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Outlook '87, Session # _____

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TOBACCO INDUSTRY OUTLOOK

C. D. White

Vice President, Brown & Williamson Tobacco Corporation

I am pleased to have this opportunity to share with you my perspective on the outlook for the tobacco industry. Ours is a vibrant industry with a strong future.

We have been and will continue to be responsive to the dynamics of a changing market and public environment. Most importantly, I firmly believe that tobacco will continue to play a major role in the economy of this nation.

More than 700,000 Americans earn all or part of their income from tobacco. At retail, tobacco is a \$30 billion business that generates some \$9 billion in federal and state tax revenues. Each year, our industry contributes nearly \$2 billion to the nation's balance of payments.

We do face significant challenges to our business. And today, I'd like to discuss three issues in particular that will have significant impact on the future of our industry.

First, a changing market has made the cigarette business more competitive than ever before. That environment has created opportunity but also new pressures for manufacturers seeking growth.

The second issue is the growing number of legislative initiatives at all levels of government designed to limit the freedoms of both manufacturers and consumers in the marketing and use of our products.

The third issue I will highlight, and hopefully put in perspective, is the most recent and well-publicized rash of so-called product liability suits brought against the industry.

Today the U.S. market for cigarette products includes about 55 million smokers nationwide. That's a sizeable number by any standards. However, the overall size of that market has been declining slightly in recent years, at an annual rate of about one to one and a half percent. Industry analysts are projecting factory shipments of about 585 billion units in 1986, down from roughly 595 last year.

Despite the maturity of the market, the tobacco industry will continue to prosper. However, to remain viable in this environment, manufacturers are compelled to make their operations as efficient as possible. It wasn't very long ago that our factories manufactured cigarettes at 4,000 per minute. Today the standard is 7,000 cigarettes per minute--and I don't believe we've yet reached our limits.

Brown & Williamson's efforts to increase productivity have been focused at the company's Macon plant. We will continue to make the ongoing investments necessary to maintain the Macon plant as a state of the art production facility. Several of our competitors have also continued to make major capital investments in plant and equipment.

The more competitive marketplace has been made even more complex by increasing segmentation in the cigarette market.

The industry is now moving through a period of transition unlike any before in its history. Customer tastes are changing. Manufacturers are responding with more new products and major changes in the way they merchandise their products.

The dramatic shift in consumer demand has been led by strong growth in the industry's value-for-money segment.

For the first time in the recent history of our business, customers can price shop for cigarettes. In 1980, the only price difference among cigarette brands was determined by length. Today, three new price categories -- generics, value-priced 25s, and branded cigarettes at generic prices -- account for nearly 9% of all cigarettes sold.

Development of the value-for-money segment is one of the most significant milestones in the history of the U.S. tobacco industry. Growth of the segment has told us that retail price tiering for cigarettes is here to stay. And price competition has shifted the marketing emphasis from traditional advertising to more promotions at retail.

For international sales, the outlook is brightened by the prospects of continued market growth.

The Far East markets, where U.S. tobacco products have been severely restricted, offer particularly good expansion potential. The 315 billion unit Japanese cigarette market, for example, is the second largest of the free-world countries. U.S. products currently account for nearly 3 percent of that market. The market share held by American products in that market could quadruple as a result of the recent trade agreement between the nations.

The industry's ability to market its products is directly influenced by legislative activities. Opponents of smoking are pressing their agenda at all levels of government. Their success would, of course, severely hamper the sale and use of tobacco products in America.

Among the industry's most critical legislative challenges are the attempts to further increase tobacco excise taxes.

Cigarettes already bear an unfair tax load. But as long as the federal government faces record deficits, these and other tobacco products will continue to be likely targets for higher and higher federal excise taxes.

The situation is not much different at state and local levels, where tobacco excise taxes are often seen as an inexhaustible source of revenues. Attempts to get higher taxes on tobacco products have also become a favored ploy of the anti-tobacco activist.

In 1986, 32 state legislatures considered proposals to impose new excise taxes on cigarettes. Similar measures have been considered by 17 city and county law making bodies this year.

To counter such activities the industry has become more active in state and local politics than ever before.

On another legislative front, the industry is challenged by efforts to ban tobacco advertising. There are also attempts being made to deny federal tax deduction for tobacco advertising expenses. Legislative proposals of this type, if passed, would violate the rights of Americans to freedom of speech, and they pose a very real threat to all segments of the tobacco industry. These rights apply equally to consumers who wish to know about goods offered for sale and to sellers who wish to tell about their goods.

The political arena has also become the source of proposals to restrict smoking in public and in the workplace.

The highly publicized federal government bans on smoking are, of course, just the tip of the iceberg. This year, 35 states considered legislation that would have told smokers where they could and could not smoke. That's a 25 percent increase over the number of states that considered similar actions in 1984--and a 50 percent increase compared to 1982.

Fortunately, the industry has been doing a good job at expressing its views on the issue. Of the 418 state proposals to restrict public smoking over the past three years, only 31 have been enacted.

We cannot afford to become complacent, however, because more and more, the issue is showing up at the local level. This year alone, some 198 local ordinances have been introduced to limit smoking.

The magnitude of these and other industry issues underscores the need for unity among all members of the industry. The willingness of members to collectively seek solutions to industry problems was strengthened recently by the restructuring of the Federal tobacco support program.

A key element in the new program is the agreement by Brown & Williamson, along with three other companies, to purchase much of the domestic price-support tobacco pool.

The buy out was a response to the need to lower the government support price to make U.S.-grown tobacco more competitive in the world export market, and to reduce the burden of the no-net-cost provisions of the pool to farmers.

The agreement immediately reduced the loan levels for flue-cured and burley tobaccos. Additionally, it developed a mechanism for fixing future support prices, making them more market-oriented.

Clearly, the program could not have been enacted into law without the active support of all segments of the tobacco industry.

One of the most publicized challenges to the industry is what has become known as product liability litigation. Although over the past year such cases have been given considerable notoriety by the media, they in fact represent little more than the latest in a long list of suits against the industry.

Since 1954, nearly 300 cases have been filed in the United States, alleging that cigarette manufacturers should be liable to persons who claim injury from smoking. The industry has not lost a single case, and no manufacturer has paid to settle a smoking and health lawsuit.

In the widely publicized Galbraith case in California the jury found the manufacturer not liable. In a Tennessee case the judge ruled the manufacturer was not liable. Since then, eight lawsuits against the manufacturers have been dismissed.

I do not wish to suggest that the industry is out of the woods on product liability. New cases continue to be filed. The point is that we remain confident of the integrity of our products, and that we are defending ourselves vigorously and with success.

Significant events in 1986 have also affected the marketing of smokeless tobacco products. Smokeless sales dropped about one percent in 1985 compared with the previous year. A further decline in the category is projected for 1987.

The category will be further challenged by the legislation passed this year, including the ban on broadcast advertising, as well as new health warnings for product packaging and print advertising to begin next February.

Another important development this year was the June trial in Oklahoma of a health lawsuit involving a smokeless product. This was the first case of its kind to go to a jury and the verdict was for the defendant.

On balance, the industry's opportunities and challenges provide a positive outlook well into the 21st century.

The industry has demonstrated the ability to adapt rapidly to keep pace with demands of tobacco consumers. Additionally, we are finding a renewed unity of support against external pressures that seek to eliminate the U.S. tobacco industry.

Unified support for industry positions on issues will become increasingly important to the future of our business. As I mentioned early in my remarks, the market for tobacco products has been gradually declining in recent years. We project a continued decline, in the range of 1 1/2 to 2 percent, in 1987.

Unfortunately, the burdens of taxation, smoking and health legislation, and other challenges to the industry will continue to dampen our progress.

The 1985 tobacco legislation, of course, will help make U.S. tobacco more competitive on world markets. Hopefully, we will see our exports increase as a result. However, the cost of U.S. tobacco is still too high for us to see any dramatic rise in sales.

The projected annual reduction in domestic sales will probably more than offset increases in our export business, thereby creating a decline in tobacco production for the next several years. This will be especially true while the four domestic companies work off the Flue-Cured and Burley buyout stocks.

This situation presents a real challenge for our tobacco producers. As production declines, the quantity of export style tobacco will become smaller and smaller.

We cure one illness by reducing the burdensome pool stocks. But those reductions, in turn, eliminate the likelihood of large pool receipts out of the upcoming crops. Our export customers may be lost if we cannot supply the quality and quantity of tobaccos that they demand.

Our growers must make a sincere effort to meet those goals by producing as much export style tobacco as they possibly can.

Quality must once again become important, and something that every producer must strive for.

Thank you for letting me share our views with you today.

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OUTLOOK FOR U.S. TOBACCO TRADE

J. T. Bunn
Executive Vice President
Leaf Tobacco Exporters Association
Tobacco Association of United States

As we look at the period ahead, I think we can expect that there will continue to be a preference for cigarettes made from light tobaccos on the world market. We can expect some increase in demand for Flue-Cured, Burley and Oriental tobaccos but the demand for dark tobaccos is expected to continue to decline.

The level of world cigarette output is a good indicator of the demand for flue-cured and Burley tobaccos.

As we consider the demand for U.S. flue-cured and Burley in the period ahead, let's take a look at the world cigarette output situation.

The demand for light cigarette tobaccos has paralleled the consumption of cigarettes made from light tobaccos. Cigarette consumption has grown rapidly over the past century - increasing from about 1 billion pieces to about 4.9 trillion pieces at the present time.

After many years of steady growth, world cigarette output showed signs of leveling off in the early eighties. In 1982 and 1983 the level of world cigarette output remained stable. Since 1983, world cigarette output has increased at the rate of about 3 percent per year; however, much of these increases can be attributed to sharp increases in output in China. Excluding China, world cigarette output increased 1 1/2 percent annually.

During the past several years, a general pattern in world cigarette output in various countries has emerged. Generally speaking, cigarette consumption has declined while consumption in most developing countries has increased.

Let's take a look at the situation in some developed countries:

United States - Cigarette consumption in the United States has dropped about 8 percent since 1981. During fiscal year 1986, U.S. cigarette consumption declined about 2 percent from the previous year's 598 billion. U.S. cigarette consumption is expected to decline another 2 percent during fiscal year 1987.

European Community - During the past five years, cigarette output in the EC-12 has dropped by about 2 percent. However, cigarette output in 1985 was slightly above 1984. In the United Kingdom, cigarette production has dropped by about 17 percent since 1981. Even though cigarette production in the Netherlands increased in 1985, domestic consumption of cigarettes has declined by about 25 percent since 1982.

Japan - In 1985, Japan produced about 300 billion pieces, about one percent below the previous year. Output in Japan had been stagnant for several years prior to 1984.

The decline in cigarette consumption can be attributed to (1) higher taxes and thus higher cigarette prices; (2) health concerns and anti-smoking activity; and (3) restrictions on where people can smoke.

The developing countries present a somewhat different pattern:

Asia - The Asian countries which are primarily developing or middle income countries increased production of cigarettes in 1985 by 6.2 percent above 1984. Since 1981, cigarette output in Asia has increased by about 20 percent. Much of this increase is due to the rapid increase in Chinese production which grew by 10.7 percent in 1985 compared to the previous year. Hong Kong and Indonesia have significantly increased cigarette output during the past five years.

South America - Cigarette output in South America increased by about 7 percent in 1985. Much of this increase was due to the 14 per cent increase in Brazil. Colombia has sharply increased cigarette output during the past five years.

North Africa - Cigarette output in North Africa has increased by about 23 percent during the past five years. Countries which have made substantial gains include Egypt, Algeria and Morocco.

Cigarette output and consumption are expected to expand in a number of developing countries during the next fifteen years. This growth in cigarette consumption is expected to more than offset the decline in developed countries.

World cigarette consumption, excluding China, will likely increase one to two percent annually during the next several years. World trade will likely increase at a slower pace than cigarette output. Consequently, any expansion in the world market for tobacco is expected to be very modest.

Let's take a look at the supply situation relative to flue-cured tobacco in the period ahead.

United States - During the past several years, the U.S. has been producing less flue-cured and a smaller share of world production while several developing countries have increased production and their share of world flue-cured tobacco trade. Twenty five years ago, U.S. flue-cured accounted for 40 percent of world production. The U.S. share has now dropped to an estimated 9

percent. U.S. production of flue-cured is now about 1/2 the level it was ten years ago. The effective flue-cured quota in 1986 was about 9 percent below the 1985 level. It is likely that flue-cured quotas will change very little until the buy-out of loan stocks is complete. U.S. flue-cured loan stocks now total about 530 million pounds.

China - In recent years, China has made rapid progress in flue-cured production. Production in China has more than doubled during the past 10 years. China produced about 2.1 million metric tons of flue-cured in 1985, which represents 50 percent of world production and over five times the U.S. production level.

Most Chinese flue-cured is used on the domestic market. Chinese exports and imports of flue-cured leaf have been small.

Brazil - Brazil is a developing country which has become a major producer and exporter of flue-cured leaf. Brazil has a relatively low cost of production and its tobacco enjoys a GSP duty preference in the EC market. Brazil has increased its flue-cured production by 60 percent during the past 10 years and has plans for future increases in production.

Zimbabwe - Zimbabwe is a major producer and exporter of flue-cured tobacco. Their low cost of productivity and duty-free status in the EC market have enabled Zimbabwe to increase its production and trade. Zimbabwe has a five year plan target of 150,000 tons of flue-cured tobacco which is about 28 percent above production in 1986.

Several other developing countries plan to increase production and trade in flue-cured tobacco. Thus it appears that we could develop some surpluses of low and medium grade flue-cured; in view of the modest increases expected in world cigarette output and world trade.

The situation relative to U.S. Burley is somewhat similar to flue-cured. Recent developments in the Burley situation include (1) more losses in U.S. share of world trade, (2) U.S. Burley loan stocks of about 490 million pounds, (3) modest increases in world Burley trade, and (4) plans for increasing Burley production by several developing countries.

One of the ways by which the United States can expand its exports of tobacco is to obtain better access to foreign markets.

The United States can have good quality tobacco for sale at competitive prices and still not increase export sales if our tobacco is denied access to foreign markets because of trade restrictions by our trading partners.

The United States is the largest exporter of tobacco and one of the largest importers of tobacco. As the world's largest exporter of tobacco, it is in our best interest to pursue a freer and fair trade policy.

During the forthcoming trade negotiations, the United States should aggressively seek to lower and/or abolish, on a reciprocal basis, both tariff and non-tariff barriers to tobacco trade. We need to concentrate on working down

1) duty preferences, 2) ad valorem taxes, and 3) subsidies.

1. The EC now grants duty free treatment to associated states and GSP duty treatment to a large number of developing countries which are major suppliers of leaf to the EC.

With lower production costs in the associated states and developing countries granted GSP on tobacco by the EC, these countries can effectively compete with U.S. tobacco. In addition these countries get duty preferences which limit access for U.S. leaf and make it very difficult for the U.S. to effectively compete in the EC tobacco market. A reduction in EC duties is desperately needed to improve our market access there.

2. The EC has been moving toward an excise tax system on tobacco products in which the ad valorem element of the tax would greatly exceed the specific element. If this is accomplished, it would be a non-tariff barrier which discriminates against the use of high quality leaf in tobacco products. The U.S. should seek an excise tax system in which the specific element is at least 50 percent of the total tax.

3. The EC Common Agricultural Policy (CAP) for tobacco has tended to stimulate over production in associated states, insulate EC tobacco from foreign competition, and has caused the EC to use some subsidies to move tobacco on the export market. With the recent addition of Greece to the EC and the forthcoming membership of Portugal and Spain, the prospects for increased tobacco production in the EC are good. In the years ahead, the U.S. should make efforts to deter the EC from using trade as an escape valve for its internal tobacco problems, and we should keep pressure on the EC to carry the financial burden of its tobacco problems, rather than transferring it to its trading partners.

And at home, we need to avoid protectionism as the answer to our tobacco problems. Protectionism will result in retaliation by our trading partners and a loss in U.S. exports.

U.S. tobacco exports for 1986 are projected to be lower than the 1985 level. However, the future for our tobacco exports still looks optimistic; in 1987, we do anticipate some modest gains in exports.

Some factors that will have a positive influence on our tobacco trade include: (1) the availability of high quality U.S. leaf, (2) the weakening of the U.S. dollar relative to foreign currencies, (3) U.S. prices are more competitive as a result of the new tobacco legislation, (4) the prospect for removal of trade barriers in forthcoming trade negotiations, and (5) a continuation of consumer preference for the American-blend cigarette. In 1986, we lost ground in ripeness and maturity as the percentage of high quality ripe and mature grades decreased by 7.7 percent which directly affects the interest of our export customer.

Some of the factors that could adversely affect U.S. tobacco trade are (1) the duty preferences enjoyed by associated states and developing countries in the

EC market, (2) the slow growth in world cigarette output and an even slower growth in world tobacco trade, (3) trade restrictions which limit our exports, (4) protectionist measures by the U.S. which tend to restrict trade, (5) competitive prices of developing country suppliers, and (6) lower U.S. production quotas which may limit quantities of some of the high quality grades required by foreign customers.

Suppliers which compete with the U.S. on the foreign market have found tobacco to be a good source of foreign exchange, and most of these competitors are developing countries which have a lower cost of production and enjoy duty preferences in the E.C.

Many competing suppliers have plans for increasing tobacco production and trade in the period ahead. These competing suppliers can be expected to go all out in their efforts to maintain or expand their share of the world tobacco market.

World trade in tobacco can be expected to increase at a modest pace in the period ahead. Thus, to increase its share of world tobacco trade, the U.S. will have to regain markets from current suppliers.

We lost a substantial share of world tobacco markets over a period of several years. Regaining our former share of world markets will be a slow and difficult process, but it should be our long term goal.

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OUTLOOK FOR TIMBER PRODUCTS

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The demands for most timber products are largely determined by the levels of activity in several important end-use markets. So before discussing demands for the various products, I would like to review trends in these markets and take a look at current estimates of their strength this year and early in 1987.

General Economic and Major Domestic Market Trends

The gross national product, a measure of the Nation's total output of goods and services, and the most comprehensive indicator of total economic activity, rose at an annual rate of 2.4 percent through the first 9 months of 1986, reaching \$3,687 billion (1982 dollars). Although this increase was somewhat below the 3.2 percent rise registered in the first three quarters of 1985, most of the difference was due to the very slow rate of growth in the second quarter. Estimates by the U.S. Department of Commerce late last month put third-quarter growth at an annual rate of 2.9 percent, far above the 0.6 percent second-quarter rise. Economists' views regarding the extent and length of the current upturn vary, however, most expect economic activity to continue at only slightly higher levels in the last months of 1986 and in the first half of 1987. A continuation of growth in the last quarter at near the current pace would mean that the GNP for 1986 would be about \$3,680 billion (1982 dollars), 2.6 percent above the average for 1985. For 1987, a slightly higher rate of about 3 percent would push the average for the year to near \$3,790 billion.

Trends in new construction, the most important domestic wood products market, vary with the type of construction. New housing units, which typically account for more than a third of total United States annual consumption of softwood lumber and plywood and for substantial volumes of other softwood and hardwood products, were started at an annual rate of more than 2.0 million units through the first four months of 1986. However, activity peaked in the first quarter, and since April the rate of starts has been slowly declining. According to preliminary data, new private housing units were started at a 1,648,000 unit annual rate in October, only slightly below the rate in September, but down 18 percent from the first-quarter average.

Although the number of housing units started has been declining over the past 6 months, the total through October remains strongly above the number started in 1985. Data from the Bureau of the Census show that new private housing starts during the first 10 months of 1986 totaled nearly 1,578,000 units, almost 5.4 percent more than in the similar period in 1985. All of the increase was the result of improved single-family activity. Through October, more than 1,031,000 single-family units were started, up 11 percent from a year earlier. During the same period multifamily starts were down about 3 percent.

There remains some diversity of opinion, however, many economists feel that even if mortgage interest rates drop somewhat over the next few weeks, the declines in sales and permits in recent months mean that weaker housing start activity will continue late in 1986 and in 1987. Recent estimates of housing starts for 1986 fall between 1,800,000 and 1,850,000 units, with the current consensus at about 1,830,000. This would be about 5.5 percent above the total number of units started in 1985 and the largest volume since 1978. Analysts' forecasts for 1987 have a somewhat wider range; however, most estimates available in late November show a substantial decline to about the 1,650,000 to 1,700,00 level. Shipments of mobile homes, down 14 percent through September, are likely to follow the same general trends shown by housing starts in the remainder of 1986 and in 1987.

Single-family units are expected to account for more than 65 percent of total starts in 1986, up from about 61.5 percent in 1985. A further increase in 1987, perhaps to more than 70 percent according to some analysts, is likely primarily because of the adverse effects of the new tax laws and weak rental markets on multifamily activity. Such changes in the proportion of single-family units have a special significance for the timber products industries because average use per unit of most wood products is much larger in single-family houses than in multifamily units and mobile homes.

In contrast to new housing construction, improvements (additions, alterations, and major replacements) to existing residential structures, another important wood products market, has been relatively weak in 1986. Through the first 10 months of the year, expenditures for this type of construction averaged \$35.0 billion (seasonally adjusted annual rate, 1982 dollars), about 12 percent below expenditures during the same period in 1985. Many observers feel that a return to higher levels of spending for improvement of existing units is likely as new housing construction slows in 1987.

The value of new nonresidential construction activity dropped fairly rapidly through the first 6 months of 1986. However, since June, total expenditures generally have been increasing, though at a relatively slow rate. The seasonally adjusted annual rate of expenditures for all nonresidential construction in October was \$182.0 billion (1982 dollars), up about 2 percent from September, but still below the rate in January and February. Much of the decline in total nonresidential expenditures during the first half of 1986 was due to weakening building construction, the most important wood-using segment of the nonresidential market. Although late in the year expenditures for many types, among them hotels, motels, and industrial, office, and other commercial buildings, were increasing, many analysts see this activity as builders' attempts to finish projects before the new tax laws take effect in January.

A number of things including slow overall economic growth, flat capacity utilization in many industries, and overbuilding of motel, hotel and office space in most major markets, apparently contributed to the first-half declines. Many of these factors persist. Consequently, though economists see nonresidential building remaining fairly strong through the end of the year, they expect expenditures to be weaker in 1987.

The index of manufacturing production--an important indicator of the demand for pallet lumber, container board, and some grades of paper--has shown some fluctuation in 1986, but little overall growth. The October index, 129.5 (1977=100), was less than 1 percent above the January value, virtually unchanged since August, and only 2.5 percent above the average for all of 1985. The indexes for the major wood using industries--furniture and fixtures and paper and products--have shown somewhat different trends. The index for furniture and fixtures in September was 147.0, down somewhat from a peak in July, but 5 percent above the average for 1985. The index for paper and products also slipped slightly at the end of the third quarter, however the September index--137.5--represented an increase of nearly 8 percent from the 1985 average. Despite the relatively flat recent trends, most economists feel that production in many industries should slowly continue up in the last quarter if economic activity continues to track as discussed earlier and that overall production for 1986 and 1987 should show some improvement.

In summation, most of the major domestic markets for timber products, though showing rather mixed tendencies through much of the year, have been relatively stronger this year than in 1985. However, prospective trends, particularly those for new housing and new nonresidential building construction, point to probable lower levels of demand for many products in 1987.

International Markets

The United States is the world's leading importer of timber products--chiefly softwood lumber, wood pulp, and paper and board from Canada, and veneer and plywood from southeast Asia. The total value of these imports in 1985 was \$12.5 billion, about 3.6 percent of the value of all U.S. imports. In terms of roundwood equivalent (i.e., the estimated amount of wood required to produce the individual products), more than a fifth of our apparent consumption of timber products in recent years has been imported.

The United States is also a major timber products exporter. In 1985, the value of timber products exports was \$6.7 billion--about 3.2 percent of our export total. Although we ship a wide variety of timber products to many different countries, our principal export markets are Japan for softwood logs and lumber, pulp chips, wood pulp, and paper and board products, and western Europe for lumber, plywood, wood pulp, and paper and board. Recently China has also become an important and growing market for softwood logs.

According to data presented at the October meeting of the Timber Committee of the Economic Commission for Europe, economic growth in most of our major European markets has been rising in 1986 with continued increases expected in 1987. Although some countries reported new residential construction at

relatively low levels, increased renovation and maintenance of dwelling units was moving briskly. As a result of these trends, and more importantly continued declines in the monetary exchange rates, exports of most products to these markets through September of 1986 were sharply up from the first three quarters of last year. Exports to Japan are also ahead of year-earlier levels; however, shipments of both softwood logs and lumber to China have declined. Overall, the outlook for U.S. international trade in timber products is for a relatively large rise for most products in 1986 with continued but smaller increases in 1987.

Timber Products Consumption, Trade, and Production

Softwood Lumber

In response to the increased year-to-year activity in some of its principal markets, and especially new housing construction, softwood lumber consumption through the first three quarters of 1986 was almost 9 percent above that of the same period in 1985. Current expectations about trends in housing and other softwood lumber markets indicate the likelihood of some slowing in the final weeks of the year. Thus, consumption for all of 1986 is estimated at about 46.5 billion board feet (table 1). This would be 7 percent above the 43.4 billion board feet used in 1985, and a record volume, exceeding the 44.0 billion board feet consumed in 1978 by almost 6 percent.

Imports of softwood lumber, chiefly from Canada, have increased rapidly over the past 10 years, rising from 5.7 billion board feet and 18 percent of our apparent consumption in 1975 to 14.6 billion and 33 percent in 1985. This trend continued during the first three quarters of 1986. Through September, total imports of softwood lumber were roughly 5 percent above year earlier volumes. About 99 percent of the increased volume was imported from Canada.

In October, a preliminary 15 percent countervailing duty was placed on softwood lumber imports from Canada. Trade data for November, the first full month under the duty, will not be available for several weeks. Consequently, the effect of this tariff on imports from Canada is largely unknown at this time. Moreover, part of the Canadian industry remains idle because of strikes that have been going on since last August. These factors, combined with the declines in U.S. housing starts would seem to indicate a probable slowing in imports in the last months of the year. However, total imports for 1986 are likely to reach 15 billion board feet, up nearly 3 percent from the record volume in 1985. As for 1987, the combined impacts of the final countervailing duty determination, due early next year, and the lower number of housing starts in prospect would seem to indicate some decline in softwood lumber imports.

Exports through the first 9 months of 1986 were up 26 percent from January-September 1985. Most observers feel that this trend, the result of improved markets and the U.S. dollar's decline relative to other currencies, will continue. As a consequence, exports for the year are likely to total about 1.8 billion board feet for the year.

Table 1.--Wood products production, consumption and trade
(1983-85 actual, 1986 projections)

Product	Year	Domestic production	Imports	Exports	Apparent consumption
Softwood lumber (billion bd. ft.)	1983	28.9	12.0	1.8	39.2
	1984	30.8	13.3	1.6	42.5
	1985	30.3	14.6	1.5	43.4
	1986	33.3	15.0	1.8	46.5
Hardwood lumber (billion bd. ft.)	1983	5.6	.3	.5	5.4
	1984	6.3	.3	.5	6.1
	1985	6.0	.4	.4	6.0
	1986	6.0	.3	.5	5.8
Softwood plywood (billion sq. ft., 3/8-inch basis)	1983	18.3	1/	.6	17.8
	1984	18.9	.1	.4	18.6
	1985	19.2	.1	.3	19.0
	1986	20.8	.1	.6	20.3
Hardwood plywood (billion sq. ft., 3/8-inch basis)	1983	1.0	1.6	1/	2.6
	1984	.9	1.5	T/	2.4
	1985	.8	1.7	T/	2.5
	1986	.9	1.9	T/	2.8
Particleboard ^{2/} (billion sq. ft., 3/4-inch basis)	1983	3.7	3/ .4	.1	4.0
	1984	4.0	3/ .6	.1	4.5
	1985	4.1	3/ .6	.1	4.6
	1986	4.2	3/ .6	.1	4.7
Hardboard ^{4/} (million tons)	1983	2.1	.2	.1	2.3
	1984	2.0	.3	.1	2.2
	1985	1.8	.3	.1	2.0
	1986	1.7	.3	.1	1.9
Insulation board (million tons)	1983	.9	.1	5/	.9
	1984	1.0	.1	5/	1.0
	1985	1.0	.1	5/	1.1
	1986	1.0	.1	5/	1.1
Pulpwood (million cords)	1983	87.5	1.7	2.0	87.2
	1984	91.5	1.8	1.9	91.4
	1985	87.3	.7	1.9	86.1
	1986	92.4	.6	1.8	91.2

1/ Less than 50 million square feet.

2/ Includes medium density fiberboard.

3/ Includes unknown quantities of structural waferboard.

4/ Shipments.

5/ Less than 50,000 tons.

Note: The projections shown for 1986 are based on the trends in the major markets discussed in this paper and should not be viewed as forecasts of actual volumes. Data shown are subject to rounding.

Sources: U. S. Department of Agriculture, Forest Service estimates based on data from the U.S. Department of Commerce, American Hardboard Association, American Paper Institute, American Plywood Association, American Pulpwood Association, National Forest Products Association, National Particleboard Association, and Western Wood Products Association.

Through September, U.S. production of softwood lumber was about 9 percent above the similar months in 1985 according to information from the Western Wood Products Association. In addition, shipments and new orders were running strongly ahead of the first three quarters of 1985. For all of 1986, production is estimated at 33.3 billion board feet, up about 10 percent from total output in 1985.

Present expectations about housing and the other important markets indicate that a decline in consumption is likely in 1987. It is not clear what effect a final duty, if enacted, will have on imports. However, if consumption drops, demand for imports is likely to be somewhat less than in 1986. Exports are expected to be slightly above those in 1986. The extent to which production is influenced by any decline in consumption will depend on imports.

Although consumption has reached record levels in 1986, the price of domestically produced softwood lumber has remained relatively low. The October producer price index was 349.5 (1967=100), up 6 percent from October 1985, but only marginally above the average for all of 1985, and still below the averages for 1983 and 1984 (table 2). Data are not available as yet to estimate the effects of the preliminary 15 percent duty on the prices for softwood lumber; however, in the long run overall market conditions will continue to be the primary determinant of final prices.

Table 2.--Producer price indexes for selected wood products

(1967=100)

Product	Annual			October	
	1983	1984	1985	1985	1986 ^{1/}
Softwood lumber	369.8	353.9	345.3	330.0	349.5
Hardwood lumber	283.7	319.7	307.2	301.1	313.8
Softwood plywood	310.4	303.6	302.9	308.9	311.9
Hardwood plywood ^{2/}	179.8	180.3	162.7	162.1	167.7
Particleboard ^{3/}	106.3	116.6	110.3	105.1	116.1
Hardboard	234.4	233.6	235.3	237.1	239.6

^{1/} Preliminary.

^{2/} Hardwood plywood and related products.

^{3/} Platen-type (mat-formed). December 1982=100.

Source: U.S. Department of Labor, Bureau of Labor Statistics.

Hardwood Lumber

Available data show hardwood lumber consumption through the late summer of 1986 slightly below the volume consumed over the same period in 1985. With a slight increase in use in the last months of the year if the major industrial markets keep pace with the overall economy, consumption is likely to reach 5.8 billion board feet, about 3 percent below the 1985 total.

Hardwood lumber imports through September were about 9 percent below those in the first three quarters of 1985, and very little strengthening is expected in the last quarter. The total for the year is thus likely to drop to about 0.3 billion board feet, down about 0.1 billion. Data through September show exports of hardwood lumber up by more than 26 percent, and the total for the year is expected to be 0.5 billion board feet, an increase of about 0.1 billion from the volume exported in 1985.

Production of hardwood lumber in 1986, based on these estimates of consumption and trade, would be 6.0 billion board feet, about the same output volume as in 1985. Anticipated growth in the major domestic hardwood markets and increased demands for exports, though possibly small, suggest some additional increase in consumption, imports, exports, and production in 1987.

Hardwood lumber prices have slowly been rising in 1986. The October 1986 producer price index was 313.8 (1967=100), about 4 percent above October 1985 and 2 percent larger than the average for all of 1985. Prices for hardwood lumber are generally more stable than those for softwood lumber, but in many instances tend to follow the same general trends.

Softwood Plywood

Some of the major softwood plywood markets, particularly new housing, remained relatively strong through the first 3 quarters of the year. As a consequence, consumption in 1986 is likely to rise to 20.3 billion square feet (3/8-inch basis), up about 7 percent from total use in 1985.

Data for the first nine months of 1986 show softwood plywood exports nearly double year-earlier volumes, with significantly larger shipments to nearly all offshore markets. Thus total exports for 1986 are expected to rise to about 0.6 billion square feet. Imports have also increased over the first 3 quarters of 1986, however they remain relatively smaller than exports and will likely total about 0.1 billion square feet for the year.

With these levels of consumption and trade, production for the year will increase to 20.8 billion square feet, up about 8 percent from total output in 1985.

For 1987, the prospective drop in new housing starts is likely to be partially offset by increases in other markets and production and consumption are expected to show small declines.

Softwood plywood prices have fluctuated in 1986, rising to an index value of 324.5 (1967=100) in April, followed by a sharp decline in the summer. Since August, prices have slowly increased. However, in October, the index was 311.9, still 4 percent below the April value, but slightly above the averages for 1983-85.

Hardwood Plywood

Consumption of hardwood plywood in 1986 is expected to be near 2.8 billion square feet (3/8-inch basis), about 10 percent above the volume used in 1985. Trade data through the third quarter of the year indicate that imports are likely to total 1.9 billion square feet, about 8 percent more than in 1985. Exports are expected to remain relatively small.

Given the trends in consumption and trade, production of hardwood plywood in 1986 is estimated at 0.9 billion square feet, slightly above the volume produced in 1985. Much of the hardwood plywood consumed each year is used in residential construction. As a consequence, some decline in consumption, imports, and production is probable in 1987 if this market drops below the levels attained in 1986.

Hardwood plywood prices as indicated by the producer price index have increased about 3 percent over the past year. Despite this rise, the October 1986 index, 167.7 (1967=100) was still below that for all years between 1978 and 1985.

Particleboard and Medium Density Fiberboard

Activity in the major markets and shipments data from the National Particleboard Association indicate that combined consumption of particleboard and medium density fiberboard through mid-summer was up from year-earlier levels. For the year, combined consumption of these two products is likely to total close to 4.7 billion square feet (3/4-inch basis), about 2 percent above total use in 1985. Data for the first nine months of 1986 suggest that imports are likely to be 0.6 billion square feet, very near the volume imported in 1985. Exports will be about 0.1 billion square feet.

With the estimates of consumption and trade discussed above, production in 1986 should be close to 4.2 billion square feet. A small increase in consumption is possible in 1987 if markets follow the trends described earlier. In general, prices of particleboard, as indicated by the producer price index, have followed the same declining trends in 1986 as have the other major timber products, that is some increase above 1985, but still below those in 1984.

Hardboard and Insulation Board

Based on shipments through the first 8 months of the year, hardboard consumption in 1986 is estimated at 1.9 million tons, about 5 percent below total use in 1985. Imports are expected to rise by about 15 percent but

remain close to 0.1 million tons, and exports are likely to be unchanged at 0.1 million tons. With these levels of consumption and trade, production would amount to 1.9 million tons, about 6 percent under output in 1985.

Markets during the first three quarters of 1986 indicate that consumption of insulation board for the year will be near 1.1 million tons--slightly above total use in 1985. Imports are expected to be about 0.1 million tons and exports to be less than half as large. Consequently, production is likely to drop by about 1.1 million tons, also marginally up from the volume produced in 1985.

Pulpwood

Through September, paper and paperboard production, and as a result, wood pulp consumption and production were about 5 percent above year-earlier levels. If overall economic activity in the last quarter continues at the levels discussed earlier, some improvement in demand is possible. However, with these trends, pulpwood consumption (roundwood and chips) in 1986 is expected to total about 91.2 million cords, up about 6 percent from the consumption in 1985 and only slightly below the record 91.4 million tons consumed in 1984.

Imports of pulpwood, mostly pulpwood chips from Canada, have declined slightly from year-earlier levels during the first months of 1986 according to available Bureau of the Census data. As a result of this trend, imports for the year are expected to total 0.6 million cords. Exports are estimated at 1.8 million cords, about 4 percent below shipments in 1985.

Given the above estimates, production of pulpwood in 1986 is expected to increase to about 92.4 million cords, 6 percent more than was produced in 1985. Prospective continued economic growth suggests that the upward trend will likely continue in 1987, though at a somewhat slower pace than in 1986.

Softwood Log Trade

Exports of softwood logs during the first three quarters of 1986 were down about 10 percent from the similar period in 1985. This overall decline was the result of a 6 percent increase in shipments to Japan, the leading U.S. softwood log export market, which was more than offset by a 41-percent drop in exports to China, a market that had been growing rapidly over the last five years. Exports for the year to all destinations have been estimated at 3.5 billion board feet, 6 percent below shipments in 1985. Industry sources indicate that the outlook for 1987 is also for a small additional decline.

Imports of softwood logs, nearly all from Canada, have declined somewhat in 1986, and are expected to total about 0.1 billion board feet in both 1986 and 1987.

Hardwood Log Trade

Hardwood log exports for 1986 are estimated at 0.1 billion board feet. Although the volume is relatively small, most of the hardwood log shipments in 1986 and in recent years have been composed of high quality oak, walnut, and other preferred species that are in relatively short supply and command premium prices in U.S. domestic markets. Hardwood log imports in 1986 are expected to be close to 30 million board feet, about the same volume as was imported in 1985.

Industrial Roundwood Summary

Given the trends in consumption, trade, and production for the various products in 1986, total U.S. consumption of all industrial roundwood products (i.e., all roundwood products except fuelwood) is expected to be about 6 percent above the volume consumed in 1985 and to top 15 billion cubic feet for the first time. Production, imports, and exports also will be above year-earlier levels. Consumption, imports, and production should all decline slightly in 1987 if the major markets follow the trends discussed earlier. However, exports are likely to continue up.

Fuelwood

Current estimates indicate that the fuelwood consumed for domestic heating and cooking has risen to more than 46 million cords. Various surveys of the forest products industries indicate that there also have been large increases in the consumption of fuelwood for industrial heat and power generation over the past few years. Apparently much of the wood being used for domestic purposes is produced by the consumers from trees in urban areas, fence rows, dead forest trees, and other similar sources not normally drawn upon for industrial timber. Most of the growth in use by the forest industries has come from increased utilization of logging and mill residues.

Because most of the increase in fuelwood consumption has come from such sources, presumably there has been little significant impact on the prices and availability of industrial products such as pulpwood. Moreover, the rapid growth seen in the late 1970's and early 1980's apparently has slowed somewhat, as the prices of fossil fuels have declined. In the longer term, however, if fuelwood use continues to grow, it will undoubtedly begin to affect the supplies and prices of other products and especially so in the future when demands for many products are expected to increase in response to rising population and economic growth.

ANNUAL AGRICULTURAL OUTLOOK CONFERENCE

United States Department of Agriculture
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IMPACT OF CONSERVATION RESERVE ON FORESTRY

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INTRODUCTION

The Conservation Reserve is part of the Food Security Act of 1985, popularly known as the 1985 Farm Bill. Together with the other conservation provisions contained in this bill, it is the most significant piece of conservation legislation passed by Congress in recent times.

The purpose of the Conservation Reserve is to improve the soil and water resources on farms and ranches through contracts with owners and operators to remove highly erodible cropland from production. The focus of the program is on cropland that has the greatest potential for erosion, some of which should not be cropped even with conservation practices. Contracts may range from 10 to 15 years, as allowed by the Secretary. Current regulations call for 10 year contracts.

Within this legislation, Congress has established definite goals for lands to be placed into the reserve:

<u>Conservation Reserve</u>		
<u>Year</u>	<u>Minimum</u>	<u>Maximum</u>
	-----Million Acres-----	
1986	5	45
1987	15	45
1988	25	45
1989	35	45
1990	40	45

Another important goal established by Congress is for tree planting under the Conservation Reserve. It directs the Secretary, to the extent practicable, to plant trees on not less than one-eighth (12.5 percent) of the land placed into the Conservation Reserve in each of the 1986 through 1990 crop years.

FOREST SERVICE RESPONSIBILITIES

In carrying out responsibilities under the Conservation Reserve, the Secretary is authorized to use the services of the Forest Service and State forestry agencies. Under the Conservation Reserve Program, the Forest Service and State forestry agencies are responsible for technical assistance activities in establishing tree planting practices.

Specifically, these responsibilities include developing tree planting plans, which become part of the conservation plan, and ensuring that trees are planted in accordance with established specifications. Tree planting plans describe the silvicultural treatments necessary to plant trees and obtain adequate erosion control on eligible cropland. These requirements include: site location, acres to be treated, site preparation, planting dates, tree species and spacing, care of nursery stock, and maintenance to ensure survival.

RELATIONSHIP TO PAST AND CURRENT PROGRAMS

Previous major tree planting programs include accomplishments of the Civilian Conservation Corps (CCC) and Soil Bank Programs. Current, major USDA tree planting programs include reforestation on National Forest lands and planting on private nonindustrial ownerships through the Forestry Incentives Program (FIP) and Agricultural Conservation Program (ACP).

Table 1 presents the high five year accomplishments for the previous and current tree planting programs, including accomplishments under the Conservation Reserve. Tree planting under the Conservation Reserve can be 3 1/2 times the best accomplishment by the CCC and 2 1/2 times greater than the best accomplishment under Soil Bank. Clearly, Conservation Reserve holds the promise of becoming the largest single tree planting program in history.

CONSERVATION RESERVE TREE PLANTING ACCOMPLISHMENTS

In 1986, there were three signups for the Conservation Reserve. Total acres bid were 15.9 million, of which 8.9 million were accepted by the Secretary. Table 2 shows tree planting for each of the three 1986 signups: 130,705 acres; 191,249 acres; and 260,558 acres. Total tree planting is nearly 583,000 acres. Acres of tree planting increased with each signup.

RELATIONSHIP TO FUTURE TIMBER SUPPLY

The entire Conservation Reserve Program, including the practices other than tree planting provide many major environmental benefits. It is a given that the tree planting acres will contribute a variety of forestry benefits. Since this conference is commodity oriented, this presentation deals only with the effects on timber supply.

Farmers and other nonindustrial forestland owners are a vital element in the current timber supply picture; they own 58 percent of the commercial timberland area, hold 42 percent of the inventory of standing timber volume, and provide 48 percent of the domestic timber harvest (Table 3).

Farmers and other private owners are expected to become an even more important source of timber supply in the coming decades. Projection of increasing demands for timber--as much as a 64 percent increase over current demand by year 2030--will create new opportunities for farmers to intensify the management of their existing woodlands and to establish trees on fields that have highly erodible soils or are otherwise marginal for agricultural use.

On the average, every acre planted to trees will add 6,300 cubic feet of wood to the available timber supply over the life of the plantation. This expands to 31.5 billion cubic feet of additional wood for a 5 million acre Conservation Reserve tree program. Tree planting, thus, will help the Nation, not only to meet vitally important soil and water goals, but to satisfy our future needs for wood; will provide new employment opportunities in wood products industries; and will lessen our dependence on wood imports from foreign countries, thereby improving the balance of payments.

In short, tree planting under the Conservation Reserve is good for the farmer and good for the Nation.

TABLE 1
TREE PLANTING - HIGH 5 YEAR TOTAL

PROGRAM	MILLION ACRES
Civilian Conservation Corps - CCC (1935-1939)	1.4
Soil Bank (1957-1961)	2.0
USFS, National Forest System (1979-1983)	1.5
USDA, Forestry Incentives - FIP/ACP (1978-1982)	1.1
Conservation Reserve (1986-1990)	5.0 +

TABLE 2
 CONSERVATION RESERVE SUMMARY

	1st SIGNUP	2nd SIGNUP	3rd SIGNUP	All SIGNUPS
Acres Bid	4,818,561	4,646,524	6,420,964	15,886,049
Acres Accepted	828,387	3,000,681	5,091,618	8,920,889
Tree Planting (Acres)	130,705	191,249	260,558	582,512
Tree Planting (Percent)	15.8	6.4	5.1	6.5

TABLE 3

Comparison of Roundwood Inventory, Harvest, and Commercial Timberland Area, By Ownership

<u>Ownership</u>	<u>Percent of Inventory</u>			<u>Percent of Harvest</u>			<u>Percent of Commercial Timberland Area</u>
	<u>All Species</u>	<u>Softwood</u>	<u>Hardwood</u>	<u>All Species</u>	<u>Softwood</u>	<u>Hardwood</u>	
NFS	32	46	8	15	20	3	18
Other public	11	11	10	7	8	6	10
Forest Industry	15	16	12	30	36	14	14
Farmer and other private	42	27	70	48	36	77	58

Source: USDA Forest Service

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ISSUES IN FOREST PRODUCTS TRADE

By A. G. (Jerry) Norris
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Marketing Director, Lumber Division

"Nothing makes me see red quicker than the defeatist attitude of some of our free trade purists who say that changing America's doormat trade policies would cost more jobs than it would save. Where are the American jobs that have been created or saved by our cumulative \$623 billion trade deficit over the past years? Give me a number!" says Lee Iaccoca, chief executive of Chrysler Corporation and Business Folk Hero of the 80's.

Mr. Iaccoca, the Forest Products industry can give you a number ... 30,000 lost jobs in the past decade directly attributable to Canadian lumber imports! We can give you another number, too ... a 15 per cent duty levied on Canadian softwood lumber by the International Trade Commission on October 15, 1986.

Since 1975, Canadian softwood lumber has increased its share of the U.S. market from 18.7 per cent to approximately 36 per cent in 1986. How or why did this happen?

First, the Canadians are formidable competitors. They produce large volumes efficiently. They have maintained good quality standards. And they are good international marketers. This year, 71 per cent of Canadian production will go into U.S. markets. U.S. lumber exports for the same period ... to all offshore markets ... probably won't exceed 4.5 per cent.

Canadian competition and the final disposition of the tariff question is certainly a major issue in forest products trade ... but far from the only issue facing us in 1987.

QUALITY ... that is, producing a quality product that fits the consumers' needs ... is a missing link in the U.S. lumber industry's ability to meet and beat foreign competition. The Southern Pine segment of the U.S. softwood lumber market (11 BBf) has historically been sold like a commodity ... and in the past decade, produced like a commodity ... ragged edged wane, electronic scanning, small log diameters (form class) higher recovery per cent and high through-put rates became the language of the industry. This adds up to quantity at the expense of consistent, marketable QUALITY.

Beans, corn, pork bellies, and wheat are commodities ... and 2x4's are commodities, unless they're holding up your dining room wall, the floor of your home or office, your deck out in the backyard, or the roof over your head! Do you want a commodity for these critical jobs?

I'm sure none of us would! Well, "what we've had here is a failure to communicate", a failure on the part of commodity oriented marketers to perceive and communicate the need for product innovation and differentiation.

The CCA Pressure Treated lumber segment consumes up to 40 per cent of Southern Pine production as well as ever-increasing volumes of Lodgepole and Ponderosa Pine. CCA Treated lumber is used in multiple outdoor exposed applications, i.e. decks, fences, railings, stairs, gazebos, planter boxes, and ground contact permanent wood foundations.

These applications require the use of treatable Southern Yellow Pine with its superior strength characteristics ... but ... those Southern Yellow Pine 2x4's must also have the aesthetic quality of furniture in order to appeal to the majority of outdoor home uses.

In 1983, just as the U.S. economy began to recover from a major interest rate/housing market recession, the Southern Forest Products Association took steps to aggressively promote Southern Pine lumber. SFPA predicted that the industry would never again see the two million-plus housing start years of the late 70's.

In October 1986, the Annual Meeting of SFPA had as its theme "Hats Off to Quality". Although I cannot speak for any other companies, what I sense clearly is that my company must consistently produce a quality product if I am going to sell it successfully against tough regional, national, and international competition. More importantly, my management and production supervisors understand that and are committed to it.

We intend to compete aggressively by producing quality lumber with full use of statistical Quality Control so we know how good our quality is. We intend to keep our state-of-the-art sawmill on the leading edge of lumber manufacturing technology so we not only produce quality products, but so we have maximum manufacturing efficiency and maximum lumber recovery consistent with quality. We intend to continue our thrust toward innovative marketing and service to our customers so that they get value, not just from our product itself, but from their total business relationship with us.

SFPA must work for a level playing field in international trade. Companies will only benefit from promotional efforts if they individually choose to compete aggressively with quality products.

In summary, Mr. Iaccoca's words have been taken seriously. The ITC initial ruling for a 15 per cent tariff, if approved by Commerce, will help "level the playing field." But, 15 per cent will only partially affect the Canadian dollar versus the U.S. dollar exchange rate deficit and may have only minimal effect on domestic prices.

The real issue ... that of producing a "quality superior" product ... has been addressed by my company. Westvaco Lumber is taking a lead role in proving that "commodity" lumber has no place in your home!

For helping me make these points, I would like to thank Lee Iaccoca, president of Chrysler Corporation; Karl Lindberg, president of Southern Forest Products Association; Bernard Fuller, vice president of Resource Information Systems, Inc., and you ... for your attention to these vital opportunities in the future of America's farms and forests.

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RICE SITUATION AND OUTLOOK

Eugene S. Rosera
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Introduction

It is a curious reflection of the outlook for the U.S. rice industry that this Outlook session should be held here in Washington instead of in rice producing states where it has historically occurred. It wasn't so long ago that the outlook for the industry was based primarily on the production, processing, and market development activities of our rice industry. Today, and perhaps for the next few years, the outlook will be more significantly influenced by Washington based farm and trade policy makers, by Congress, and Administration officials who manage the programs, who determine Gramm-Rudman cuts, who measure world price. At some point, the outlook for the U.S. rice industry may again be largely based on market forces. In the interim, the rice sector must be aware that its outlook could be shaped by legislative or policy decisions which could seriously alter the current rice program. There are three major avenues under which the outlook for the U.S. rice sector could be affected here in Washington in 1988 and forward: 1) changes in farm legislation, 2) overall outlay reductions under Gramm-Rudman, and 3) trade legislation and negotiations.

Before discussing those potential policy changes, let us review the situation and outlook by examining the current USDA estimates of supply and demand.

1986-Crop Situation and Outlook

The supply/use estimates presented today are USDA's November estimates. For the current year, our November estimate is compared with two other current year scenarios which incorporate different production and export forecasts.

Looking back on the reliability of USDA's November production estimates, the variation from the final estimate averages about 3.0 million hundredweight over the past 10 years (below the final 6 years and above the final in 4 years). Also the variation of the November export estimate from the final is also about 2.0

million hundredweight. These combined range estimates show that ending stocks could reasonably be expected to vary 5 million hundredweight, or about 8 percent in either direction from the current estimate of 63.1 million hundredweight.

The November production estimate of the 1986 crop is 131.3 million hundredweight, based on harvested acreage of 2.3 million acres and a harvested yield of 5626 lbs/acre. On the national average, this yield is up 3.5 percent from 1985 with increases occurring in all States but Missouri. In Texas, yields are up nearly 15 percent to 6300 lbs per acre.

Of greater interest to many millers and domestic users of rice than the aggregate level of production are the production levels of long versus medium and short grain rice. The USDA estimate of the 1986 crop is that 96.4 million hundredweight (73.4 percent) are long grain and that 34.9 million (26.6 percent) are medium and short grain. Long and medium production for 1985 were in nearly the same ratio as this year. USDA estimates that use for 1986 will be about 70 percent long and 30 percent medium/short and that ending stocks will be in the same relative balance by class.

The USDA export estimate of 80.0 million hundredweight is based on a country-by-country analysis of export marketing prospects. For the 1986 crop year, the increases from the 1985 export level of 58.7 million hundredweight (a 36% increase) are accounted for by anticipated increases to Western Europe, the Western Hemisphere, primarily Brazil, and the Middle East, primarily Saudi Arabia. This export estimate is rather conservative compared to the estimate of the Rice Millers Association, but it includes virtually a full recovery of market share in traditional U.S. export markets.

Some U.S. millers have expressed concern that a large share of the increased export sales are of rough and brown rice. An underlying reason for this is that U.S. rough and brown rice are relatively more competitive in world trade than is U.S. milled rice. The reason is that the formula for measurement of world price is designed to make U.S. milled rice competitive. The formula takes into account the costs of milling, bagging, and handling bagged, milled white rice. Some of these costs are not incurred in the export of brown or paddy rice, and so such rice can be relatively more competitively priced than milled rice.

Domestic use for 1986/87 is estimated at 58.0 million hundredweight, about a 5.5 percent increase from 1985. Looking at industry shipments since 1981, domestic use of milled rice has

increased about 4.5 percent per year up through 1985. With the drop in domestic prices resulting from the marketing loan program, domestic use is expected to increase at a better rate than in recent years. Although brewers and seed use this past year appears to have been flat, new products and increased promotion of table rice should boost total domestic use to about 58.0 million hundredweight for this current year.

The USDA forecast of 1986/87 ending stocks is 61.3 million hundredweight, about a 20 percent decline from carryin stocks. Ordinarily, when stocks are declining at such a rate CCC would not anticipate many loan forfeitures. Some market analysts also assert that since cash prices are above the loan repayment level, producers have no incentive to forfeit rice to the CCC. However, the availability and use of generic certificates is obviously creating a certain rotation of CCC rice inventory that could affect loan repayments. If we look back at the 1985 crop year, we see that about 18.0 million hundredweight of CCC inventory were used--5 million for various program uses and 13 million exchanged for generic certificates. Deliveries to CCC were an estimated 15.5 million hundredweight. For 1986/87 we expect this rotation to continue. It is difficult to estimate the magnitude of further certificate redemptions this year. From August 1 through November 19, about 10 million hundredweight of rice were exchanged for certificates. We are currently estimating that for this crop year, combined certificate redemptions and program use could reach 29 million hundredweight. Should such usage occur and rice millers and exporters carry normal inventory, CCC can expect to acquire about 27 million hundredweight from the 1986 crop. With the depletion of CCC's California inventory, no other large paddy sales on hand and certificate premiums at a high level, certificate redemptions for rice fell to a weekly low of only 25,000 hundredweight for the period of October 22-29. At that time, certificate premiums were about 25-30 percent, too high to make most CCC inventory competitive with new crop. However, certificate premiums dropped in early November and some certificate brokers look for further premium drops next year. The premium will be the major determination of further certificate redemptions for CCC rice.

1987-Crop Outlook

The elements of the 1987-crop rice program are basically unchanged from 1986. The acreage limitation is unchanged at 35 percent. Base acreage, which is calculated on a 5-year planted history, is not likely to vary much from the current 4.2 million acre level. Program yields will be calculated as they were for the 1986 crop--the average 1981 through 1985 payment yields

excluding the highest and lowest yields. Although the national average loan level is down 5 percent, it is in fact about equal to the 1986 loan rate after application of the 4.3 percent Gramm-Rudman reduction. Deficiency payments, although calculated by different rates and not reduced by Gramm-Rudman, will essentially be at the same level as for the 1986 crop.

Overall, we expect the rice program to encourage production within the permitted acreage and that, as in 1986, virtually no rice will be produced outside of the program. The major uncertainty about the level of production is the harvested yield. Over the past three years, harvested yields have jumped over 22 percent - from about 4600 pounds per acre in 1983 to over 5600 pounds this year. Since the new high yielding varieties have been widely adopted, we expect further yield increases to reflect primarily the improved management of these varieties. The yield projected for 1987 of 5750 pounds reflects about a 2 percent increase from 1986 yields which were up about 3.5 percent from the 1985 level.

The USDA estimate of domestic use for 1987 is a trend extension of the 1986 estimate. Domestic use is forecast to increase about 5 percent-up to about 61 million hundredweight. The magnitude of U.S. exports is probably the item of greatest uncertainty in the outlook for 1987 crop. Exports are forecast at 85.0 million, a 6 percent increase. We do not expect exports to increase as they have this year. The jump in exports from about 59 million hundredweight for 1985 to 80 million for 1986 (about a 36 percent increase) was due to the recapturing of traditional shares of European and Middle East markets. Growth in exports for the 1987/88 marketing year will be dependent on maintaining these traditional markets while either developing new world markets or capturing a steady share of expanding world trade. In recent years, however, world trade has been rather flat, remaining within a range of about 11.5-12.5 million metric tons the past four years. If world trade remains flat, export growth will largely depend on developing new commercial markets. Large export markets are not ordinarily quickly developed, but three markets do come to mind-all proven markets for U.S. rice where trade policy changes could greatly enhance U.S. exports: Iran, Nigeria, Japan.

Given these estimates of production and use, ending stocks of 42.2 million hundredweight result. The most important aspect of this estimate is that it infers that a 35 percent ALP could likely be excessive for the 1988 crop. (Remember that the ALP level cannot be so high as to result in ending stocks of less than 30.0 million).

1988 Policy Outlook

Although our view is that the rice sector should prosper under the current farm bill provisions through the 1987-crop, three policy changes could alter this outlook effective with the 1988 crop.

1. Changes to the Farm Bill. It appears that Congress will be considering amending the Food Security Act of 1985. Concerns over commodity program outlays and large outlays to single individuals may cause Congress to re-examine target price levels or payment limitation provisions. There has been some discussion of re-examining underlying policy approaches, ranging from mandatory controls to the elimination of individual commodity programs as under the prior Boschwitz/Boren proposal. The rice outlook could be drastically altered if either of these proposals were adopted for rice unless an export subsidy for rice were maintained.

2. Gramm-Rudman. Even if payment rates and limitations are left at the levels as currently provided and other rice program provisions are unchanged, Congress has the ability to cut program outlays under the Balanced Budget and Deficit Control Act of 1985. The FY 87 deficit target was \$144 billion; the target for FY 88 is \$108 billion. To achieve such a deficit target, some current estimates are that outlays would need to be trimmed 8-10 percent. Although such a cut would trim marketing loan outlays, the total package of rice outlays would be sufficient to both insure adequate production and maintain a prosperous milling and export sector. The unanswered question is not only whether this outlay reduction will occur, but if imposed, whether the reduction would be of such magnitude as to affect rice production and curtail exports.

3. Trade Negotiations and Legislation. The U.S. Trade Representative recently rejected the Section 301 petition by the Rice Millers Association against the rice policy of Japan. Ambassador Yeutter recognized the validity of the complaint but went on to say that both Japan and the U.S. should examine the trade implications of their respective rice policies and subject those policies to the negotiation process. The issue of access to the Japanese market is likely to receive Congressional attention this year and the Special Trade Representative expects the Japanese policy to be discussed within the Uruguay round of the multinational trade negotiations. The outcome of this trade dispute could have a great impact on the levels of U.S. rice production, exports, and program costs in future years.

Ultimately, the outlook for the U.S. rice sector is of its own making. It may be that the greatest long term benefit of the marketing loan program is not the recovery of exports which is occurring, but the time it has bought for the U.S. industry to become competitive on it's own.

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CHANGING DYNAMICS OF EXPORT MARKETING

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Today I am going to visit with you about the changing dynamics of the California rice export marketing situation. I'll briefly review some of the historical developments leading to the point where the new marketing loan program became effective in 1986, discuss California export activities since that time, review the impact of expanded exports on CCC inventories and comment on competitive reaction. I will also comment on the current California long grain situation and the advantages of bulk and destination bagged export shipments from California. We'll then wrap up with some thoughts about where we go from here.

California principally produces very high quality medium and short grain rice. More than 90% of the 86 crop was planted to those classes. California also has the highest field yields per acre of any U.S. rice producing state or for that matter, other similar rice growing areas of the world. Typically more than 98% of our crop is harvested as U.S. #1 quality. While California's medium grain is of the same USDA class as southern medium grain, there are pronounced differences in taste between the two types which are perceived by discriminating consumers. Most of the more sophisticated, commercial markets prefer the California type of medium grain, generically known as "Calrose", for use as regular milled table rice.

Five years ago the California rice industry was dramatically different than it is today. At that time there were more acres harvested; that, of course, was true of U.S. rice industry in general. More significantly, there was also a different marketing mix.

The California industry began the 80's following a period of substantial exports. Exports were in the range of 750,000 metric tons annually and utilized about two-thirds of the state's crop.

California exports began a sharp decline after 1981. On the average, only about one-third of the crop continued to be successfully exported each year, although some fairly significant year-to-year variations occurred. Although its purchases from California were declining, Korea, for several years, continued to be the largest and dominant export customer for the California industry as it had been in the late 70's. Second place among export customers varied with Indonesia, Peru and Bangladesh all sharing that position in different years. More recently, in 1984, Senegal, Mali and Upper Volta were

significant export markets for California resulting from the special African Relief Program. Then, in 1985, the Philippines became our largest export customer.

Sales to Korea, Spain, Portugal and to Italy (which imported paddy rice) were on commercial terms. In recent years sales to other major markets were principally through programs which provided various types of concessional terms. For example, the PL 480 program, in the 1981 through 1985 crop years, utilized respectively 25, 49, 42 and 18% of the rice exports from California.

Over the last five years California accounted for, on the average, about 17% of the annual U.S. exports compared to its production which was about 23% of the total U.S. crop. The state's percentage of the total U.S. rice exports during this period ranged from 13% to 21%. Virtually all of these exports were medium grain. Although California typically has only the highest quality rice available, the quality of its exports varied considerably depending upon the customer. Korea bought bulk, #5/15% brown rice, the Philippines bought #5/20% brown rice, Italy bought paddy, PL 480 recipients primarily bought #5/20% milled rice although Peru typically bought #3/15%. The African countries, recipients of the special relief rice, preferred the maximum broken content that we could ship.

Other commercial exports of high quality milled rice from California during this period were relatively minor. Moderate sales to Saudi Arabia, the United Arab Emirates, Canada and the Pacific Trust Territory accounted for most of the additional exports.

Except for the commercial sales to Korea, California rice exports in the period leading up to the implementation of the new marketing loan program could be characterized as being generally non-price competitive, volatile and highly oriented to concessional markets. Sales were not, in any significant quantities, directed to markets where the superior quality of the California rice crop could be financially rewarded.

In several recent years, California production exceeded marketing opportunities. When that occurred significant quantities of rice were forfeited to CCC. Acquisitions by CCC in California in 81 were 8.0 million cwts, in 83 they were 12.0 million cwts and in 84 they totaled 4.7 million cwts (although, for the first time, about one-half of that was long grain). In the five year 81-85 period, about 30% of total CCC rice acquisitions were in California.

Things have been dramatically different in California since April 15, 1986. Although the 85 crop marketing year began with the milling and shipment for the large Philippines PL 480 sale, almost all of the rice for that sale was carried over from the 84 crop. Following that, the anticipated implementation of the new Farm Bill 85 crop rice marketing loan provisions created a hiatus in both the commercial and the concessional export markets.

Loan repayment rates were initially determined with medium and short grain values higher than those for long grain. In addition to not making U.S. medium grain competitive internationally, that condition effectively foreclosed California medium grain from successful participation in any subsequent PL 480

tenders. Although southern medium grain was practically exhausted at the time, substantial quantities of lower quality long grain were available which could be priced on such tenders below medium grain.

The initial value relationship problem was subsequently corrected. Since then a lot has happened to California rice exports.

In the period April 15 through December 1, 1986 more than 160,000 tons of California medium and short grain rice have been sold to commercial markets. Most of the sales are to new U.S. and California customers. These sales will utilize about 6.5 million cwts of paddy rice.

Additionally, more than 126,000 tons have been sold concessionally. These sales will utilize about 4.2 million cwts of paddy rice.

New commercial markets include Turkey, Syria, Jordan, Brazil, Israel, Chile and several EEC and Scandanavian countries. All of these markets have been particularly impressed with the quality of our California rice. Sales to Jordan were additionally assisted by the USDA Export Enhancement Program in response to strong price competition from Italian rice millers.

Most of the paddy inventory for these sales has come from California CCC stocks. Medium and short grain stocks owned by CCC in California on April 15, 1986 were in excess of 10.0 million cwts; today they total only about 1.4 million cwts. This inventory, acquired with generic PIK certificates, had a lower acquisition cost to processors and exporters than did 85 and 86 crop paddy. New crop production has been set aside until these CCC inventories are exhausted. That action is principally driven by the fact that there is no variable seasonal interest expense on program eligible rice and by the flat-rate seasonal storage structure common in California.

As a result of all of these sales, California mills have been very busy during the last 5 to 6 months.

That pace has slowed, however, as foreign competitors have reacted to U.S. prices. At the same time international prices have been weakening, U.S. firms have been unable to sell additional California origin export rice at its former price level. In general, California export prices quoted today are from \$20 to \$25 a ton higher than they were only three months ago to the same customers for identical quality rice.

California medium and short grain export prices quoted today are now significantly above the basic prices of major foreign competitors, especially Italy. At current loan repayment rates the price levels that are necessary to be competitive from California today do not equate to the net values received by simply forfeiting 86 crop rice to CCC. In my opinion, that is partially because the formula utilized to translate world market prices to loan repayment rates does not adequately allow for all of the costs that occur in the actual sales and marketing of current crop rice.

In order for California exports to resume, it will be necessary for world prices to increase or for loan redemption values to be lowered. Alternately, in the case of Jordan, for example, the EEP program could again be authorized.

Jordan, having become acquainted with our superior quality, would prefer to again buy from us. Italy, however, currently is offering Camolino rice at about \$40 a ton below our best price. I think that it is interesting to note that the Italian price includes an EEC restitution to the seller of \$445 a metric ton.

We estimate that approximately 40% of the 86 California crop is in excess of domestic requirements and is currently uncommitted. That is about 10 million cwts of paddy rice (or about 250,000 tons of milled rice). Coincidentally, it is also just about the same quantity that was purchased from April 15th to date from CCC for new export sales. Because of the high quality of the California crop, it will be difficult to compete in price with the lower quality southern long grain likely to be offered later this year under PL 480 tenders. The substantial price support discounts currently applied to lower quality long grain represent a substantial additional marketing advantage to southern origin rice when it is added to lower southern freight costs.

We lost no time taking advantage of the potential opportunities offered us by the new marketing loan program. High quality California rice has been introduced to many new commercial markets; they like the product. After having temporarily seized the marketing initiative and capturing much of the latent import demand for higher quality medium grain rice by utilizing relatively inexpensive CCC inventories, it will be interesting to see how the remainder of the marketing year unfolds. With the new nine month loan maturity program, California still has considerable time remaining during the 86 marketing year to merchandise its exportable new crop. Our ability to continue the early successes of the rice marketing loan program will depend largely on the manner in which the program is administered to permit us to remain competitive. As I've discussed, we haven't yet reached the loan repayment level where we can begin to sell current crop rice.

I'd like to comment briefly on California long grain production and how we see its export potential in the foreseeable future.

There has been considerable interest in California in the last few years in the production of long grain rice. At Farmers' Rice Cooperative, we have been and remain skeptical of both the agronomic and the economic potential of this class in California.

Producing an acceptable long grain in California is certainly challenging the odds. Our northern latitude is a distinct disadvantage. Our consistently demonstrated ability to excel in the production of other classes accrues a substantial comparative advantage to medium grain growers. We do have in California today, however, several varieties of long grain rice that look like traditional long grain rice; USDA classes them as long grain rice. To every reasonably sophisticated domestic and export market in the world, however, these California long grain varieties are considered inferior. Although there has subsequently been a decline in plantings, in 1984 nearly 20% of the state's rice acreage was devoted to these varieties.

Because of its classification, this rice has qualified for the much higher long grain price support values that have been in effect. While the field and milling yields of this rice are somewhat less than that experienced for medium

grain, the \$2 cwt premium available from the price support system resulted in a gross premium of more than \$140 an acre to the grower. The lower field yield and milling yield created about a \$40 an acre penalty; the difference, \$100 an acre, was all profit. In addition to the premium offered by USDA, several California firms, much to their subsequent economic distress, also guaranteed growers substantial premiums over medium grain values for this rice. All of these incentives resulted in overproduction for what was, and is, a very limited domestic market potential. The surplus long grain, of course, was forfeited to CCC where it remains today.

We don't see much export potential in the foreseeable future for the varieties of California long grain rice that are currently available. There are several reasons for this conclusion:

1. The rice is inferior in cooking and taste quality to southern U.S. or Thai long grain. When acceptable at all, it must be sold at a significant discount to these standard long grains. It will be a formidable genetic challenge to correct this inherent product defect.

2. The price support value factor differentials between the classes has narrowed, removing a potential source of artificial premium to the grower.

3. California is not advantageously located with respect to commercial long grain export markets. Our higher ocean freight and port costs from the West Coast make California exports of long grain non-competitive to the South.

4. Without a premium market price or a price support value sufficient to compensate for the somewhat lower field and milling yields, California long grain acreage will be further reduced.

The CCC long grain inventory in California will need to be merchandised in some concessional manner. It is imperative that this be done prudently so that its liquidation will not displace conventional medium grain markets, undermining the value and inventory positions that firms currently have in medium grain.

A few comments on bulk sales and destination bagging are also appropriate. Such sales from California, where we have high stevedoring costs and port fees, are likely to increase in the future.

A comprehensive study was done last year in conjunction with our PL 480 shipments to the Philippines. In that sale brown rice was shipped bulk and then bagged at destination. We concluded that savings of more than \$36 a ton in total costs were realized. All of the savings accrued to the customer. Substantially more rice was shipped for the same PL 480 expenditure. These savings occurred in the costs of labor utilized in handling bags, both at the rice mill and in the port, in the difference in port tariffs and in the difference in ocean freight rates for bagged and for bulk rice.

We have also recently shipped substantial quantities of high quality milled rice (U.S. #1, 3 and 4 percent broken) to several Middle-Eastern customers with good results. In some cases this rice will be repackaged at destination in smaller consumer-sized packages. In general, we can load a

vessel in bulk for about \$33 a ton less than we can load bagged rice, not considering the cost of bags which we assume to be the same at either end. Again, savings in ocean freight accrue as a result of shipping in bulk. The buyer must, of course, supply bagging labor at destination but it is always substantially less costly than we would experience in the U.S. The cost of discharging and handling bagged rice and the costs for discharging and handling bulk rice for bagging are similar. All things considered, we calculate that a savings in total cost of about \$30 a ton typically occurs on a bulk U.S. West Coast origin sale compared to a similar bagged sale.

At those considerable differences, the ability to economically ship bulk rice will be strongly merchandised by California firms at every opportunity where circumstances permit bulk discharge and handling.

Congress clearly mandated that the new marketing loan provisions of the rice program were to make U.S. rice competitive in international markets. We believe that means that the program should be administered over the marketing year in a manner that will meet an objective of being as competitive as necessary to at least move the rice that is produced from the current year's harvested acreage. If we expect any meaningful long term rice production adjustments to occur in other countries, it is imperative that we continue to sustain this competitive price pressure and that we capture as much market share for the U.S. as possible.

If that objective is met in the future, I'm optimistic about the ability of California to continue to develop an expanded base of commercial customers, even under the present highly restrictive and competitive international trade conditions. Under a more favorable international trade environment such as might occur with the liberalization of rice imports into Japan or Korea, California, by virtue of its comparative agronomic advantage, its geographic location and its long history of high quality production of the types of rice preferred by those markets, is in a position to substantially increase its commercial export sales with relatively little or any assistance from the marketing loan program. Such markets are going to become increasingly important in the later years of the current rice program when the minimum repayment levels of the marketing loan program begin to increase.

California marketers have already taken advantage of the opportunities created by the new rice program. We are ready to meet our challenges and now look forward with enthusiasm to a brighter future.

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DAWN OF A NEW DAY-- BRIGHTER EXPORT OUTLOOK FOR THE U.S. RICE INDUSTRY

J. Stephen Gabbert
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The Rice Millers' Association

While many Americans do not realize it, the U.S. is one of the world's leading rice exporting countries. The U.S. rice industry, concentrated in California and the Gulf states is a \$2 billion industry, where traditionally two out of every three tons produced are exported.

The last four years have been particularly difficult for U.S. rice farmers, millers, and exporters. We have seen U.S. rice exports, which reached 3 million tons in 1980, plummet to 1.9 million tons in 1985 as our share of the world market shrank from 24% to only 17%.

Speakers at last year's Outlook Conference sketched out for you how chronic weak import demand relative to large exportable supplies resulted in world rice prices crashing to their lowest level in real terms since World War II. Indeed, while I am sure those speakers analyzed the underlying causes of both weak demand and unusually large exportable surpluses, let me refresh your memory.

Despite near self-sufficiency in most Asian countries during the 1970's, increased rice export availabilities in major exporting countries satisfied an expanding demand from Indonesia, the Middle East and West Africa. In particular, Indonesia, flush with foreign exchange obtained from its oil exports, was the prime locomotive driving growth in the world market with annual imports averaging nearly 2 million tons during the 1977-80 period. The combination of pests, disease and drought propelled Indonesia into the position of the world's largest importer. However, after successive bumper crops, Indonesia quickly turned from being a large importer to a net exporter. Rice self-sufficiency was the result not only of good weather, but of wide-spread introduction of high yielding varieties (HYV) which were resistant to pest and plant diseases.

Initially, the effect of the fall-off in Indonesian demand was not immediately felt in the world market because of South Korea's massive import needs in 1981. The subsequent absence of large Korean imports highlighted the exit of

Indonesia from the ranks of rice importing countries and the overall sharp reduction in Asian import demand (which averaged 4.65 million tons in 1979-81, declining to 2.8 million tons in 1985).

Coincident with this drop, international demand weakened due to a combination of a global economic recession, a third-world debt crunch, the decline in petroleum and other commodity prices, and the effect of the strong U.S. dollar. Rice imports by OPEC member countries, for example, fell last year to under 2.2 million tons -- the lowest level since 1975.

As world rice prices declined in 1982, U.S. export prices for milled rice initially followed until rough rice prices hit the statutory minimum loan rates established in the 1981 Farm Act. Meanwhile, world prices continued their decline below U.S. loan rates. These loan rates acted as a floor preventing U.S. export prices from keeping pace with those from competitor countries, especially Thailand. The average price spread between top quality U.S. and Thai rice delivered in Western Europe, for example, went from \$59/ton in 1981 to \$119 in 1982, jumped to \$175 in 1983, \$203 the following year, and reached \$229 in 1985.

The predictable result: the persistence of the unusual and growing price spread resulted in many former buyers of U.S. rice purchasing Thai rice and deciding that, for the price, it was a bargain. Thus, while U.S. exports tumbled 36% between 1980 and 1985, Thai exports surged 49% as Thailand grabbed U.S. markets and captured 35% of the world rice market.

RICE EXPORTS BY MAJOR ORIGINS

	1980	1981	1982	1983	1984	1985	Jan-Sept 1985-1986	'85: '84	'85: '80	'86: '85
	-----1,000 MT-----						-----	---Percent---		
THAILAND	2,681	3,050	3,620	3,700	4,528	3,993	3,237 3,574	-12	49	10
U.S.	2,977	3,008	2,487	2,331	2,129	1,906	1,441 1,780	-10	-36	24
PAKISTAN	968	1,127	794	1,299	1,050	961	561 903	- 8	- 1	61
BURMA	675	674	701	450	727	450	292 503	-38	-37	72
CHINA	675	590	470	580	1,168	1,010	NA NA	-14	50	NA

What a difference a year makes! When USDA's Outlook Conference was held last year the future of the U.S. rice industry was grim. While total U.S. rice exports declined 36% between 1980 and 1985, an increase in food aid shipments in 1985 partially masked the much larger decline in commercial rice exports. Between 1980 and 1985, commercial rice exports dropped 54% from 2.54 million tons to 1.18 million tons. Indeed, the decline in commercial rice exports in 1985 alone was about 500 TMT. If the 1981 Farm Act had been kept in place, U.S. rice exports could have been expected to decline further to 1.7 MMT in 1986 -- 600 TMT below the likely level which will be shipped this calendar year. I believe that the erosion in overseas markets for U.S. rice was accelerating at such a rapid rate that by 1988 only negligible quantities of U.S. rice would have been exported. Indeed, Asian rice prices were so

severely undercutting U.S. rice prices that many countries receiving rice under food aid would have switched to other foodstuffs to maximize scarce foreign exchange reserves. Further, a rising tide of imports would have captured a significant share of the domestic U.S. rice market.

Faced with dwindling overseas markets and mounting stocks held by CCC, the U.S. government would have mandated ever-larger acreage diversion programs in an attempt to limit accumulation of government-held stocks. It is easy to imagine that both efficient and high-cost producers would have been required to idle in excess of 50% of their rice land. The result: a weakened rice industry reduced to a fraction of its former size, and in no position to quickly take advantage of the eventual recovery in world import demand.

The 1985 Farm Act, with its innovative marketing loan provisions for rice, quickly restored competitiveness, allowing the U.S. to begin recapturing former markets. While rice exports in the 7 months preceding enactment of the marketing loan program had declined 20% from the previous year, exports during the first 7 months following implementation of the marketing loan have dramatically increased by 49% when compared to the same period in 1985.

COMPARISON OF U.S. RICE EXPORTS AND SALES BEFORE
AND AFTER MARKETING LOAN

	<u>1984/85</u> -----1,000 MT-----	<u>1985/86</u> -----	<u>% CHANGE</u>
PRE-MARKETING LOAN, EXPORTS (AUGUST-MID APRIL)	1,401	1,118	-20
POST-MARKETING LOAN, EXPORTS AND SALES - MID APRIL THRU NOVEMBER 13	1,372	2,046	+49

SOURCE: USDA/EXPORT SALES

Looking at traditional U.S. rice markets, the marketing loan program has allowed the U.S. to fully recapture its share of the EC market which had declined to 20% last year (compared to 30% in 1981). In Saudi Arabia, where the U.S. market share declined from 58% in 1981 to 44% in 1985, the marketing loan has permitted exporters to largely regain that share of the market which had been ceded to Thailand. In the case of South Africa, the newly competitive rice export prices have resulted in a capping of any further advances in Thai rice exports whose market share had soared from 6% in 1981 to 56% last year. In addition, U.S. rice is now penetrating such non-traditional markets as Brazil, Turkey, Syria, Jordan, Papua New Guinea, and Hong Kong.

A joint U.S. rice industry team recently spent 3 weeks in Asia surveying production and marketing conditions in major producing and trading countries. I would like to share with you some of my impressions from that trip.

While the decline in export prices has continued through 1986, there are signs of what may prove to be a healthy world rice market emerging during the balance of the 1980s. The decline in the world prices this year was relatively modest, given the increased competitiveness of U.S. rice resulting from the marketing loan provisions of the new U.S. farm law. World prices for top quality white rice have declined by 13 percent this year despite a projected 21 percent increase in U.S. rice exports in 1986. (Notwithstanding exaggerated reports from Bangkok about the adverse impact of the marketing loans, the major rice exporting countries have all shipped out more rice this year. The volume shipped from Thailand through September reached over 3.57 million tons -- a 10% gain over the same period in 1985 in what looks like Thailand's second best year ever. More spectacularly, during the same period, Pakistan has posted a 61% gain in exports and Burma's shipments are up 72%.)

Further, world rice prices have reached such a low level and have declined for so long that some importing countries have begun to re-think their past policies of ever higher internal support prices at any cost. Many governments are re-discovering the law of comparative advantage. Malaysia, for example, has decided it can more profitably concentrate on plantation crops whose export earnings can finance a higher level of rice imports. In addition, some countries, such as Brazil, have found rice such a bargain that they have decided to take advantage of low prices to rebuild stocks. Thus, Brazilian imports have been in excess of supply needed as a result of this year's drought-reduced domestic production.

Consequently, world rice trade this year is forecast to reach 12.6 million tons -- more than a one million ton increase over 1985. This large increase in world trade has significantly reduced surplus rice stocks in the United States, Thailand, Pakistan and Burma.

Further, some exporting countries have at last begun to re-evaluate the relative profitability of rice vis-a-vis other commodities. Thailand, for example, this last year limited the size of its dry season crop, and it appears that it will continue to do so in the future.

Finally, part of the problem of recent years has been compounded by the occurrence of unusually favorable weather. While long-time observers of the rice trade have been expecting for the last several years that the law of averages would re-assert itself, at last it appears that in 1986/87, a more normal weather pattern is occurring.

While the U.S. Department of Agriculture is forecasting that world rice production in 1986/87 will increase marginally to 468 million tons of paddy, (an increase of 1 million tons), we believe that world production will actually be flat and may decline. More significant is the distribution of that production -- rice production in many of the major rice exporting countries is likely to decline in 1986/87. In Thailand the main wet season crop will likely be 1 million tons below last year's level. USDA is currently forecasting a decline of half that level. Similarly, while USDA is forecasting production in Burma will increase slightly, irregular monsoon rains in the Irrawady Delta are

reported to have reduced production. (In addition, dwindling foreign exchange reserves are compelling the Burmese government to be less aggressive in pushing farmers to deliver their production quotas to the government and in improving rice rations for urban areas.) Finally, while 1986 production in Pakistan is expected to partially recover from last year's drought-reduced level, total supplies available for export will be reduced as government-held stocks are now only at pipeline levels.

I am increasingly optimistic about the future of the world rice market and the U.S. rice industry's export prospects. But just as it has taken us several years to slide down the slippery slope of depressed world demand, it will probably take several years for the world rice market to recover. One positive long-term factor is world population growth which is laying the foundation for expanded import demand in Africa, Asia, the Middle East, and Latin America.

For this potential demand to become effective, third-world economic growth will have to reach sufficient levels to overcome the current international liquidity crisis. Finally, while stocks in key exporting countries have been drawn down this year, in aggregate they still are above historical norms. Consequently, rice prices in 1987 at best will likely increase only slightly over current levels and may actually be flat as import demand will ease to under 12 million tons. A significant recovery in world prices can be expected in 1987, however, if normal weather patterns prevail in Asia.

The rice marketing loan provisions of the 1985 Farm Act provide a "window of opportunity" for the U.S. rice industry. As I indicated earlier, the U.S. rice industry was in a severe state of decline, literally withering on the vine, under the rigid provisions of the 1981 Farm Act. The provisions of the new law provide a breathing space which must be used to its fullest advantage if U.S. production, milling, and distribution costs are to be cut to more competitive levels. Simultaneously, world import demand must strengthen.

A recent study by Mississippi State University (MSU) frames the challenge before the U.S. rice industry and scientists at land grant universities and highlights some of the progress which has already occurred. The challenge confronting the U.S. is whether 21st century technology and cost cutting innovations can successfully compete with 19th century wages. The MSU study found that in 1984 the total estimated cost of production (including land charges) was \$10.62/hundredweight (cwt) for the Delta area of Mississippi or more than double the cost of production in Thailand's Central Plains which was estimated at \$5.04/cwt. The introduction of new semi-dwarf HYV's, however, has reduced production costs by \$2.00-2.70/cwt because of dramatic yield increases. In addition, land values have declined significantly since 1984, reducing land charges or rental costs from \$47/acre to about \$30 currently. The MSU study estimated that based on current land values and assuming full adoption of currently available technology, the estimated cost of production in the Delta is \$8.00/cwt.

In other words, while in 1984 average production costs were 107% above that of Thailand's Central Plains based on present land values and full adoption of

currently available technology, the average cost of production could be reduced to within 58% of that occurring in Thailand.

While it is doubtful that U.S. production costs can ever be completely reduced to the level of our Asian competitors (with their low labor costs and cheap land values), there clearly are additional gains which can be captured through varietal improvement and cost-effective innovations in milling and transportation.

Further, it need not be necessary to reduce U.S. production costs to \$4.50-5.00/cwt if rice import demand were to recover. While world rice prices, in real terms, are at post-World War II lows, there is no reason to assume that they will continue at current bargain basement levels. While a return to more "normal" weather in Asia may solve our problem by either reducing exportable surpluses in competitor nations or by increasing import demand, we would be foolish to sit back and wait for nature to take its course.

Rather, this window of opportunity must also be used by the U.S. Government to aggressively open markets which are currently unfairly closed to imports of U.S. rice. It is for this reason that the U.S. rice industry on September 10, 1986 filed a Section 301 trade petition seeking to open the Japanese rice market to imports of U.S. rice. Our studies indicate that import liberalization in Japan would result in imports of 4.5 million tons of brown rice, with the U.S. the likely supplier of about half of the quantity imported. Further, if Japan were to open its doors, the import demand created would expand rice traded in the world market by 35% and roughly double rice prices. We know of no other market that could expand world trade so quickly and substantially benefit all rice exporting countries.

But, as they say, it takes two to tango and only the U.S. government can negotiate with foreign governments to obtain fair and equitable access for U.S. rice. Clearly, the challenge before us is not only one for the U.S. rice industry, but also a challenge for the U.S. government if a viable \$2 billion industry is to regain its health.

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THE 1987 OUTLOOK FOR FOOD PRICES

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The rise in food prices in 1986 has been small. Currently, the food component of the Consumer Price Index (CPI) for 1986 is expected to average about 3 percent above 1985. The rise this year equals the average rise in the food CPI over the past 4 years. Therefore, the rise in food prices this year does not represent any change in the trend. Prices of foods sold in grocery stores have risen a little under 3 percent this year while prices for food served in restaurants and fast food establishments have risen nearly 4 percent.

Farm prices, costs of processing and distributing foods, and consumer demand are the major factors influencing retail food prices. The Food Security Act of 1985 (FSA85), which sets farm policy through 1990, provided lower support prices for a number of farm commodities. Beyond the farm gate, a lower general inflation rate this year, brought about by lower oil prices, has kept costs of processing and distributing foods down. A slightly lower unemployment rate and a modest increase in real disposable personal income have had some positive effect on consumer demand for food. The net effect of moderations in production cost and some increases in consumer purchasing power has been only small increases in retail food prices.

A discussion of some individual categories of the CPI for food and factors which have affected supplies can help to explain price fluctuations this year and set the stage for our 1987 forecast.

Meats and Poultry

Beef and veal prices declined in each of the first 5 months of 1986 putting second quarter retail beef prices below year earlier levels. Beef production was above year earlier levels because of continued liquidation of nonfed cattle and the marketing of cows under the Dairy Termination Program (DTP), a provision of FSA85. Government purchases of meat, as mandated under FSA85, offset the added supplies from the DTP and kept prices from falling further.

In the second half of 1986, the liquidation of nonfed cattle slowed and marketing of dairy cows declined. As a result, second half beef production is expected to be nearly equal to second half a year ago. Fed cattle marketings have remained strong, indicating that most of the reduced production was in non-fed beef used for hamburger, all beef hot dogs, bologna, and other processed beef. Choice beef cuts have remained in good supply, and retail beef prices in the second half are up only 3 percent from second half last year. The decline in prices during the first half was offset by increases in the second half and the annual average increase in beef prices is less than 1 percent above 1985.

Pork production declined during the first half of 1986, but large supplies of beef and poultry kept pork prices from rising. By June, pork supplies had dropped to the lowest levels in 13 years. Production was down, cold storage stocks were the lowest on record and imports were also down. Retail pork prices then rose sharply and have remained high. Currently retail pork prices are 19 percent above a year ago.

Poultry production increased to near capacity this year as producers worked to fill the void left by smaller red meat supplies. Demand for broilers was strong this past summer, particularly among the various fast food chains. A number of those chains were heavily promoting new chicken items, causing increased demand. Demand for broilers was also high in grocery stores as consumers sought to substitute chicken for the higher priced red meats. Competition between grocery stores and fast food chains for broiler supplies pushed prices up sharply. To further complicate the tight broiler supply situation, production in the Southeast was slowed because of the severe heat. Although death losses due to the heat were up some, most of the problem stemmed from poor weight gains. Chickens tend to eat less in hot weather. As a result, the average broiler produced in the Southeast last summer weighed about 15 percent less than normal. The heat also caused lower fertility rates in hatching eggs which extended production problems into the fall. Broiler production has now recovered and demand has relaxed from the high summer levels. Prices have fallen since summer, but remain well above a year earlier levels. Retail poultry prices in 1986 will average about 6.4 percent above 1985.

Red meat supplies will continue to decline next year. Beef production is expected to be down 6 to 7 percent from 1986. Choice fed beef supplies will remain near 1986 levels, but supplies of non fed beef used for processed beef products will be lower. Some fed beef will be used for processing, reducing supplies of some choice beef cuts which will help to push retail prices up. Overall, retail beef prices will likely average 4 to 6 percent above 1986. Pork production will be below 1986 levels through most of next year. As a result, retail pork prices will likely average 3 to 5 percent higher.

Poultry producers will continue to expand production next year to take advantage of lower red meat supplies. Consumption will remain strong because consumers perceive poultry as a good buy relative to higher priced red meats. With larger supplies, poultry prices are expected to average slightly below the 1986 average, but not by more than 3 percent because of the influence of higher red meat prices.

Fish and Seafood

Prices of fish and seafood have increased more in 1986 than any other major food component of the CPI, about 9 percent above 1985. At the same time, domestic consumption of fish has reached a record high level. While demand for seafood is expanding, supplies of the more traditional species are diminishing. To combat the danger of over fishing, conservation measures have been implemented to limit the take of some species, putting pressure on domestic supplies. To satisfy growing domestic demand, seafood processors and wholesalers are searching for new foreign sources of supply and are also promoting lesser known species. The supply situation is not likely to improve in 1987, and retail prices are expected to rise another 7 to 10 percent.

Dairy Products

Retail prices for dairy products in 1986 are expected to average the same as in 1985. Slightly lower prices for fluid milk have been offset by higher prices for processed products. The Dairy Termination Program (DTP), has cut milk production, but the effect on retail prices has been minimal because the program is reducing surplus supplies and not effecting consumer supplies. In 1987, with surpluses reduced and commercial use expected to increase, stronger retail prices are likely at the end of the year, but prices are not likely to average more than 2 percent above 1986.

Cereals and Bakery Products

The Food Security Act of 1985 has caused market prices for wheat, rice and other food grains to drop dramatically. Lower raw product prices, however, have had little effect on retail prices because most of the retail price of cereals and bakery products is for costs of processing and marketing. Because grain prices are lower, they will help to offset increases in the costs of processing and marketing. Retail prices of cereals and bakery products this year are expected to increase about 3 percent. Next year, with continued increases in processing and marketing costs, the increase in the CPI for cereals and bakery products is again expected to be about 3 percent.

Fresh Fruits and Vegetables

Fresh fruit prices are expected to be up less than 3 percent in 1986 over 1985. Larger citrus supplies have helped to dampen price increases. Citrus trees, which were damaged by bad weather several years ago are recovering and yields are much improved. Summer fruits, particularly peaches, did not size well in the drought areas of the Southeast, pushing up prices in some markets. In 1987, citrus supplies will be higher than in 1986, helping to dampen price increases. Smaller apple and pear crops this fall will cause tight supplies through the first half of 1987, and prices are likely to average higher. The CPI for fresh fruit in 1987 is expected to average very near the 1986 level. Fresh vegetable prices are averaging about 3 percent higher this year than in 1985. The severe drought in the Southeast did not have a significant effect on prices since the states hit by the drought supply only about 2 percent of domestic commercial vegetables. Moreover, many of the vegetables grown in that area were

harvested ahead of the drought. A record large potato harvest in the fall of 1985 provided large supplies and low potato prices in 1986, helping to hold down the CPI for fresh vegetables. Reduced acreage for other fresh vegetables, brought less production and slightly higher prices.

This Fall, potato acreage was reduced and the harvest was smaller. Potato prices in 1987 will be up from the low levels of this year. Other fresh vegetable prices will likely average higher also because acreage intentions are down for the winter vegetable crop.

Processed Fruit and Vegetables

Processed fruit prices in 1986 will average below 1985. Most of the decrease can be attributed to lower frozen concentrated orange juice prices (FCOJ). Prices of FCOJ this fall are 15 to 20 percent below a year ago. Prices for other processed fruits have remained fairly stable. Lackluster demand for most processed fruits will keep prices stable again in 1987. Prices for FCOJ will likely remain stable also since domestic production is expected to be up. However, some increase could result from the outcome of an agreement with Brazil concerning the dumping of FCOJ on world markets.

Prices for processed vegetables in 1986 will average about the same as in 1985. Consumer demand for canned and frozen vegetables has fallen off in recent years as evidenced by the drop in consumption. Prices in 1987 are not likely to rise significantly.

Fats and Oils

The fats and oils component of the food CPI has been falling gradually all through 1986, reflecting large world supplies of vegetable oils. Retail prices for shortening, salad oils, and margarine have decreased to about 4 percent below year earlier levels. Retail prices for non dairy substitutes and peanut butter have increased slightly, but not enough to offset the decline in prices of other oil products. Retail prices for fats and oils products will average about 2.3 percent below 1985. With the large harvest of soybeans this year and continued large supplies of vegetable oils worldwide, retail prices of fats and oils are also expected to decrease slightly in 1987.

Nonalcoholic Beverages

The nonalcoholic beverage component of the CPI for food has increased about 6 percent this year primarily because of higher coffee prices. A severe drought in the coffee producing areas of Brazil last season reduced the Brazilian crop by about 58 percent. Brazil supplies about 25 percent of U.S. coffee. While reduced Brazilian coffee supplies would cause tight supplies and higher prices, the supply situation did not warrant the magnitude of the price increase we experienced. Consumer alarm caused most of the price increase. Consumers flocked to grocery stores in January and February to stock up on coffee and avoid higher prices. Soon, grocery store shelves were depleted and indeed, prices rose 40 percent above year earlier levels. Since April, coffee prices have fallen each month, but remain about 23 percent above a year ago. Retail prices of soft

drinks rose 2 to 3 percent during the year. Coffee accounts for only about 20 percent of the nonalcoholic beverage category, but was responsible for a 6 percent increase this year in the whole category. Supply conditions are expected to return to normal next year and coffee prices are expected to continue to decrease.

Table 1--Changes in Food Price Indicators, 1984 through 1987

Table 1--Changes in Food Price Indicators, 1984 through 1987						
		:	:	:	Forecast	
		:	1984	1985	1986	1987
		:	:	:	:	:
<u>Consumer Prices Indexes:</u>	<u>Relative Importance</u>	:	<u>Percent</u>			
All food	100	:	3.8	2.3	3.1	2 to 4
Food away from home	33	:	4.2	4.0	3.9	3 to 5
Food at home	67	:	3.6	1.4	2.7	2 to 4
Meat, poultry, and fish	20.0	:	1.6	-0.3	4.1	3 to 5
Meats	15.8	:	0.3	-1.0	3.1	3 to 5
Beef and veal	8.5	:	1.2	-2.1	0.9	4 to 6
Pork	4.5	:	-1.3	0.2	7.5	3 to 5
Other meats	2.7	:	0.4	0.6	2.4	2 to 4
Poultry	2.2	:	10.6	-1.0	6.4	-3 to 0
Fish and seafood	2.2	:	3.2	4.9	9.0	7 to 10
Eggs	1.3	:	11.7	-16.6	5.7	0 to 2
Dairy products	8.8	:	1.3	1.9	0.0	0 to 2
Fats and oils	1.9	:	9.5	2.2	-2.3	-1 to 0
Fruits and vegetables	10.1	:	8.6	2.6	0.7	2 to 4
Fresh fruits	2.4	:	11.1	10.1	2.3	0 to 2
Fresh vegetables	2.9	:	10.9	-4.3	3.0	7 to 10
Processed fruits and vegetables	4.8	:	6.0	2.6	-1.6	0 to 2
Processed fruits	2.4	:	7.2	4.1	-2.9	-1 to 2
Processed vegetables	2.4	:	4.7	1.1	0.0	1 to 3
Sugar and sweets	2.6	:	3.9	2.5	3.2	1 to 3
Cereals and bakery products	9.1	:	4.4	3.8	2.9	2 to 4
Nonalcoholic beverages	7.4	:	2.5	2.0	5.8	0 to 2
Other processed foods	6.0	:	3.0	3.3	2.5	3 to 5

Consumer Food Demand

Slow growth in the general economy this year has added little strength to consumer demand for food. Indications are that economic growth will be slightly stronger in 1987, but not enough to add much to food demand. Growth in real disposable personal income has been a modest 2.5 percent in 1986. Slightly stronger growth in the economy in 1987 could add slightly to the growth rate in real disposable personal income, but these changes will be small. The unemployment rate, 7 percent this year, is expected to decrease slightly in 1987. This would indicate that some of the increase in disposable income would go to the lower income groups where demand for food would be strengthened. Nevertheless, the changes in general economic indicators are too small to add much to existing consumer demand for food.

Food Marketing Costs

Labor, packaging, transportation, energy, and other nonfarm input costs incurred in processing and distributing food make up over two-thirds of the retail cost of a typical market basket of foods. The farm value of raw farm inputs make up the other third. Therefore, changes in marketing costs have a strong influence on retail food prices. In 1986, food marketing costs have been stable to lower, thereby dampening retail food price increases.

Changes in the costs of marketing food are measured by the Food Marketing Cost Index (FMCI). A look at the four major components of the FMCI will offer some insight on how retail food prices have been affected this year by marketing costs and what might be expected next year.

Labor

The labor component of the FMCI accounts for about half of all food marketing costs. Labor costs averaged about 1 percent less in the first nine months of 1986 than in the same period last year. Most of the decrease in labor costs occurred at the retail level, reflecting multitiered labor contracts which offer new employees lower wages than those paid to existing workers. Other labor settlements in recent years have provided small cost of living increases, lower overtime rates, and smaller holiday and sick day benefits. Many stores paying union wages have closed and been sold to independent or small food chains which do not pay union wage rates, thereby reducing labor costs. With low inflation in the general economy and less pressure on consumer budgets, workers tend to be more conscious of job security than in wage increases. The general inflation rate is expected to remain low again in 1987 and the trend in small wage increases in labor negotiations is expected to continue.

Packaging

Packaging costs are the second largest component of the FMCI, accounting for about 15 percent. The average price of packaging materials used by the food industry was 2 percent lower in the first 9 months of 1986 than in the same period in 1985. Slightly higher prices for glass containers and metal cans were offset by lower prices for paperboard and plastic products. Sharply lower prices for petroleum, from which plastic packaging materials are derived, have helped to keep packaging costs down. Food packaging costs are expected to rise 5 to 7

percent in 1987. Demand for packaging materials carries beyond the food industry and expected growth in the general economy, although modest, suggests some bidding up of prices for packaging materials.

Transportation

Transportation accounts for about 11 percent of food marketing costs. Costs for transporting food have not changed significantly this year. Rail freight rates for food products have not changed from last year and are not expected to rise appreciably in 1987. Truck rates have not increased either. Next year, costs for transporting food are expected to increase little if at all. Competition among a growing number of trucks will hold rate increases to a minimum.

Energy

Energy costs are 9 percent of total food marketing costs. Because of the dramatic drop in crude oil prices, energy costs have decreased this year. Prices of fuel oils have dropped 35 percent and prices of natural gas are down 5 percent. Rates for electricity, however, rose 2 percent. Increases in energy costs in 1987 are dependent on prices of crude oil. If OPEC producers agree on oil production levels, the price of crude will rise. When such an agreement will be made is unknown, but oil prices will not rise significantly until current large supplies are worked off. As a result, energy costs to the food industry in 1987 are expected to rise a modest 2 to 4 percent.

Table 2--Price Changes for Major Food Marketing Inputs

Category	Average annual change from previous year			
	1984	1985	1986p	1987f
Food Marketing Costs	4	1	-1	2 to 4
Labor	3	0	-1	1 to 3
Packaging	10	0	-2	5 to 7
Transportation	4	1	0	0 to 1
Energy	1	-2	-14	2 to 4

p=preliminary f=forecast

In conclusion, food price increases have been small this year. Food price rises in 1987 will be near the same rate as 1986. Smaller red meat supplies will be the primary source of food price increases next year. Smaller supplies of fresh vegetables, particularly potatoes, will also bring about higher prices. Economic growth will be modest in 1987 and consumer demand for food is not expected to increase. Prices of major marketing inputs will increase modestly, adding little to retail price increases. The rise in the food CPI in 1987 is expected to be 2 to 4 percent above 1986.

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IMPACTS OF IMPORTS ON FOOD PRICES AND CHOICES

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In the past year the United States imported \$19.3 billion worth of agricultural products, an increase of 7 percent over the year before. About 86 percent of agricultural imports are used for food. Forty percent are not produced domestically and do not, therefore, compete directly with domestic farm products. Agricultural exports traditionally exceed agricultural imports but during May of this year the value of agricultural imports exceeded exports by \$152 million. Only one other time since 1959 has the balance of trade in agriculture been negative, and that was during a longshoreman's strike in 1971. This time, the phenomenon was due to significant declines in agricultural exports (down 12 percent in value and 23 percent in volume compared to May 1985) and temporary increases in the value of imported coffee and tomatoes.

The main question being addressed today is what impact these food imports have on food prices and consumers' choices. Before looking at some numbers, it is useful to remember that the economics of trade shows that as long as those countries or regions which produce specific food products most efficiently do so, and then trade them for products produced more efficiently elsewhere, consumers in both countries gain by having more goods available at a lower cost. In the absence of any political or economic barriers to trade, imported food should provide U.S. consumers with wider choices at prices lower than would prevail if the same foods were produced locally.

Complementary Imports

Food imports are classified as complementary if they are not produced domestically and as supplementary if they add to or compete with domestic production (Milmoë, 1983). Complementary food imports increase the variety of foods from which consumers can choose and improve both the taste and nutritional stature of the American diet. They are produced at lower cost in other places primarily because of tropical or specialized climates not available in the United States.

Complementary food imports comprise about 30 percent of the volume and 40 percent of the value of agricultural imports. They include coffee, bananas, cocoa, tea, spices, tropical fruits, some tree nuts and some cooking oils. Although the last three items are officially classified as supplementary or competitive imports, several are not produced in the United States. The distinction is somewhat arbitrary since all complementary food imports compete with domestically produced food to the extent that consumers' food dollars would be spent on domestic products in the absence of imports.

The per unit import value of five important complementary imports has fallen absolutely and in constant 1980 dollars between 1980 and 1985. In real terms, the per unit import value of spices fell 33 percent, cocoa beans fell 34 percent, chocolate preparations fell 32 percent, and coffee fell 12 percent (Table 1). The average retail price of coffee also fell 4.5 percent in real terms during that time.

The real per unit import value of bananas and tea rose by 25 and 19 percent respectively over the past six years. In the case of bananas, however, a 25 percent increase represents only 2 cents a pound; their price has actually been quite stable since 1981. The average real retail price has been 34 cents per pound every year since 1980 except for 1982 when it was 33 cents (Table 1).

With the exception of tea and less so for bananas, per unit values of complementary food imports have been falling. When these falling per unit import values are reflected in lower food prices, consumers benefit either by being able to buy more of these foods or by having more money left to buy other, domestically produced foods and other goods and services. One factor that may keep lower import prices from being reflected in lower retail food prices is import tariffs, fees or other trade barriers. Complementary food imports are not, however, generally subjected to tariffs or other overt trade restrictions, a topic that will be discussed later in this paper.

Changes in the prices of complementary imported foods are primarily a function of world wide supply which is, in turn, a function of weather conditions and other major unforeseen and largely uncontrollable events such as wars and cartels. For example, the recent drought in Brazil destroyed over half of their coffee crop. Brazil provides 30 percent of the world's high quality coffee beans and when they had a short supply in early 1986, coffee prices rose about 50 percent. In order to maintain its share of the world's coffee market, Brazil is now buying less expensive beans for its domestic consumers and exporting most of its own crop. Decreases in Brazilian coffee production have been partially offset by increased production in Africa, Indonesia, Thailand, and the Philippines and other parts of South America. Overall, world coffee production in 1986/87 is expected to be down about 14 percent. Barring another drought, the price of coffee beans is expected to drop back to normal, though it will remain high for the next few months.

Other weather related effects include a 1984 drought in Kenya which decreased their coffee and tea production. Tea production has since increased 29 percent in Kenya and it is up in both India and Sri Lanka while down somewhat in China. The real per unit import values of tea increased over 18 percent between 1980 and 1985. They fell 10 cents per pound or 11 percent between 1984 and 1985. The large increases in 1983 and 1984 can, again, be attributed at least partially to bad weather.

Cocoa bean production in the Ivory Coast is forecast to be down about 2 percent this year but world production is predicted to be up about 2 percent overall. The impact of this on prices will probably be minimal. If anything, it should continue the downward trend in cocoa and chocolate products' per unit import values (Table 1).

Supplementary Imports

Those food imports which are close substitutes for domestically produced agricultural products are called supplementary or competitive. They compete directly with domestic producers for the consumer's food dollar. These foods are imported because: (a) Domestic demand exceeds domestic supply, as in the case of sugar. (b) They are produced more efficiently (at lower cost) elsewhere and it is cheaper for us to import them than to produce them domestically. Casein exemplifies this case. (c) They are not perfect substitutes for locally produced food. They provide unique taste characteristics which can be obtained only in certain regions of the world or with particular processing skills. They may or may not be less expensive than their American counterparts, but consumers demand them because they add variety to the diet. Many European cheeses and wines exemplify this type of food import as does fresh produce available from warmer climates during our wintertime.

Supplementary food imports include beef, pork, fish, cheese, fruits and fruit juices, fresh and processed vegetables, wheat flour and bakery products, sugar, some vegetable oils and casein. They comprise about 70 percent of food imports by volume and 60 percent by value. Over 85 percent of them are processed foods so that considerable value has been added to the raw agricultural commodity before it enters the United States. Processed foods for which the import value more than tripled between 1972 and 1982 include fresh and frozen pork, poultry, dairy products, cheese, casein, biscuits, cakes and wafers, wine, malt beverages, vegetable oils and coconut oil (U.S. Foreign Agricultural Trade Statistics, 1969, 1972, 1982).

The percent of total consumption of selected foods that is made up of imports and the nominal and real per unit value of imports between 1980 and 1985 is reported on Table 2. Real retail prices for selected similar foods are included for a comparison of the direction of change. Real per unit import values declined steadily over the past six years for red meats,

wheat flour products, sugar, cheese, and malt beverages (beer). In the case of beer, meats and grain products, this corresponds with an increase in the import consumption ratio. On the surface this would seem to imply that these foods were being imported on the basis of comparative advantage in production and consumers should benefit by lower food prices. In fact, the real retail prices of ground beef, white flour and whole wheat bread did fall by 1.4, 23 and 9.6 percent respectively. On the other hand, the average real retail price of canned hams, many of which are imported, increased 3 percent and T-bone steaks, almost none of which are imported, increased 4 percent (from \$3.63 to \$3.78 per pound). Many factors influence the changes in retail prices of supplementary food imports. Tariff and nontariff trade barriers, discussed later, increase the prices of imported foods to consumers. Weather conditions and both world wide and domestic supplies are two other factors.

Currently, both the domestic and world supply of red meats is high relative to demand and production is expected to increase from 101.7 million tons in 1985 to 102.6 million tons in 1987. This should tend to depress price increases of red meat for several months to come.

Fruit and vegetable imports are more sensitive to weather vagaries than most other food imports. The import consumption ratio of vegetables rose from 3.7 to 4.8 percent between 1980 and 1984. In spite of tariffs and other trade regulations on tomato imports, the average real price of fresh tomatoes fell 7.5 percent since 1980.

The real per unit value of fresh and frozen fruit imports rose until 1983 and then fell, settling at almost the same value it began with in 1980 (\$.17-.18 per pound). The average real retail price of strawberries reflects this by peaking in 1982 and then falling, ending up 4.7 percent lower in 1985 than in 1980. The import consumption ratio of total fruit rose steadily from 26 to 32 percent over that time.

Fruit juices behaved differently. The import consumption ratio rose dramatically from 13 percent in 1980 to 56 percent in 1984 dropping back to 39 percent by 1985. The real per unit import value fluctuated only one cent per pound but the retail price increased 11 percent. Heavy frosts in Florida in 1984 forced a large increase in imported citrus juice, mainly from Brazil. Citrus production in South America and Australia has increased since 1984 increasing world supplies. This should hold down future price increases in citrus fruits.

A normal or above normal production of other fruits around the world in 1986/87 are found in table grapes, peaches, nectarines and apples. Their real prices should not be expected to rise. Fruits which may be in short supply next year are pears, apricots, cherries and processing tomatoes. Their prices can be expected to rise as can the price of almonds which were diminished by bad weather in almond producing areas around the world.

Real per unit import values of wine fell between 1980 and 1983 and then rose 21 percent. Cooking oils' real per unit value fell overall, but was 42 percent higher in 1984 than it was before or after. Most of this was due to big increases in the unit value of coconut oil during 1984. The price of palm oil may decline in the future as Colombia is expanding the area devoted to its production.

The real per unit import value of sugar declined 42 percent over the past 6 years while the real retail price fell 30 percent. The price of sugar, however, is determined largely by trade restrictions and domestic supply.

In general, the real price of most imported foods, has fallen over the past six years. One could interpret this as a natural outcome of healthy competition but other factors come into play. Worldwide excess supplies of some products tends to depress prices. Innovations in transportation and handling, especially with respect to fresh produce, is lowering costs and providing consumers with greater variety and lower prices.

Trade Restrictions and Prices

Every country aspires to be nearly self-sufficient in food production and is loath to seeing its productive capacity eroded by import competition. The United States as well as every other trading country in the world has a variety of tariffs and non-tariff barriers to importing food that competes with domestic production. Among the good purposes these trade barriers are designed to serve, lowering the price of food to consumers is not one of them.

The United States has import tariffs on 82 different categories of supplementary food imports representing about 36 different types of food. Twenty two percent of the tariffs are an ad-valorem tax; the rest are fixed rates ranging from 0.1 cent per pound for fresh peaches in brine entering during the summer months to 35 cents a pound for table potatoes and \$1.34 per gallon of champagne type wines. Ad-valorem tariffs range from 3 percent on corned beef to 35 percent on prepared apricots (Menzie Prentice, 1983).

Tariffs increase the price of foods on which they are levied but they are not changed often and are not generally a cause of price fluctuations. Furthermore, tariff rates have tended to decline over time and the use of non-tariff trade barriers (quotas, licenses, embargos) have increased. The United States uses absolute quotas to restrict the quantities of red meat, sugar, and dairy products being imported. There are tariff-rate quotas on fluid milk, live cattle and (until 1988) seed and table potatoes. Duties and import fees are fairly common. A wide variety of domestic regulations that specify grade, size, quality, maturity, sanitation, health and labeling standards for specific foods, though not designed as trade barriers, can act as such. They raise the costs of importing, but they also protect the health and safety of consumers (Menzie & Prentice, 1983).

Import restrictions tend to raise prices of imported products but the real danger of these restrictions lies in retaliatory measures by trading partners which results in overall diminished volumes of trade. Trade wars are known to raise consumer prices, and, ultimately, consumer incomes by causing the rate of economic growth to slow down. It has been estimated by Houck (1983) that restricting imports and exports in the United States by 25 percent would increase the import prices of foods and beverages by 23 percent in the short run. The long run price for a new mix of domestically produced and imported foods would increase 0.5 percent. Long run price increases for all imported agricultural commodities were similarly estimated to climb over 25 percent.

Several examples of the predicted or actual impacts of current trade restrictions on food prices bear examination. For example, studies by the World Bank (1986; 112-113) estimate that consumer food prices in the United States are 17 percent higher than they would be without trade restrictions.

Import quotas on beet and cane sugar are the most obvious example of import restrictions that results in higher food prices. Import quotas on sugar are set so that only the difference between domestic demand and domestic production is imported. We pay about 20 cents per pound for imported sugar, the price deemed necessary to keep the domestic sugar producers in business, while the world price is about 6 cents. The difference of 14 cents times the 1984 domestic sugar consumption of 17.3 billion pounds is \$2.4 billion. This averages \$9.50 per person or about \$3.52 per household per year. This rough calculation is very close to the \$2.5 billion consumer welfare loss estimated by Dardis (1986). Others have estimate that out of the extra \$2.5 to \$2.9 billion U.S. consumers spend per year for sugar, \$1.6 to \$1.8 billion is transferred to domestic sugar producers, \$0.5 to \$0.66 billion is transferred to the countries holding the quota rights and about \$0.5 billion is "lost to the economic winds" (Rossmiller & Tutwiler, 1986).

Considerable discussion about restricting imports of casein has taken place. The hope is that such restrictions would cause casein users to switch to non-fat dry milk alleviating some of its excess supply and lowering government costs of the domestic dairy program. Casein is not produced profitably in the United States primarily because of high support prices for non-fat dry milk. A study conducted by Manchester and Lipton (1986) showed that either a 50 percent quota or a 50 percent ad-valorem tax would result in higher food prices of \$66 million and \$180 million respectively. Furthermore, the ad-valorem tax would have little or no impact on government costs. A 50 percent quota could, however, save between 4 and 14 percent of the total \$2.2 billion cost of the dairy program. The higher figure assumes that all cheese made with casein is replaced by natural cheese. Coffee whiteners and dessert toppings use about 20 percent of the imported casein. For these products, there is no good substitute for casein and import quotas on casein would raise their prices.

With a growing recognition that trade barriers imposed "at the border" such as tariffs, quotas and licenses tend to trigger retaliation, domestic production subsidies are playing a larger role in determining the flow of trade (Blackhurst, 1986). Domestic policies that subsidize production may actually lower food prices but can increase taxpayers' costs. Domestic production quotas, especially when combined with import quotas almost certainly raise consumer's food prices. For example, a domestic production quota on peanuts keeps the price of peanuts about 3 times higher than the world price. We pay one third the price for peanuts produced in excess of quota but we do not import peanuts at this lower price (Johnson, 1986).

Consumer gains from imported goods rely on being able to take advantage of trading goods produced in countries that have a comparative advantage in their production. Cost savings from specialization and trade can be passed on to consumers in the form of lower prices in the absence of trade barriers. Furthermore, trade provides an incentive for domestic producers and processors to improve their technology and efficiency by adopting lower cost production methods. This ultimately lowers consumers' costs. It also fosters product innovation responding to consumers' demands. It generally increases consumers' choices.

Food imported into the United States clearly increases choices. The overall impact on prices is probably downward but notable exceptions exist and have been discussed. The real per unit value of most imported foods has trended downward. Fluctuations in import values are generally caused by weather related shortages and these can be predicted only on short notice. The only imported products for which these types of shortages and short run price rises are currently expected are coffee, pears, apricots, cherries, processing tomatoes and almonds.

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Table 1

Complimentary Food imports to The United States: Per Unit Import Values 1980-1985

Commodity	Unit Value of Imports (Nominal Dollars Per Pound)	Unit Value of Imports (Real 1980 Dollars Per Pound)	Real Retail Price (1980 Dollars per Pound)
<u>Chocolate Preparations</u>			
1980	1.39	1.39	
1981	1.21	1.03	
1982	1.07	.95	
1983	1.06	.93	
1984	1.17	.98	
1985	1.14	.94	
	<u>-18%</u>	<u>-32%</u>	
<u>Cocoa Beans</u>			
1980	1.19	1.19	
1981	.85	.79	
1982	.74	.66	
1983	.73	.64	
1984	.96	.81	
1985	.95	.78	
	<u>-20%</u>	<u>-34%</u>	
<u>Spices</u>			
1980	.70	.70	
1981	.71	.66	
1982	.69	.61	
1983	.61	.53	
1984	.57	.47	
1985	.57	.47	
	<u>-19%</u>	<u>-33%</u>	
<u>Tea</u>			
1980	.70	.70	
1981	.70	.67	
1982	.70	.65	
1983	.77	.70	
1984	1.04	.93	
1985	.95	.83	
	<u>+36%</u>	<u>+18.5%</u>	
<u>Coffee-green</u>			<u>Roasted Coffee</u>
1980	1.61	1.61	-
1981	1.20	1.44	3.05
1982	1.17	1.37	2.95
1983	1.19	1.41	2.93
1984	1.30	1.49	2.96
1985	1.26	1.42	2.91
	<u>-22%</u>	<u>-12%</u>	<u>-4.5%</u>
<u>Bananas</u>			
1980	.08	.08	.34
1981	.10	.09	.34
1982	.10	.10	.33
1983	.11	.09	.34
1984	.11	.10	.34
1985	.11	.10	.34
	<u>+37%</u>	<u>+25%</u>	<u>+0%</u>
<u>Casien*</u>			
1980	1.11	1.11	
1981	1.29	1.20	
1982	1.29	1.18	
1983	1.18	1.07	
1984	.99	.88	
1985	.87	.77	
	<u>-22%</u>	<u>-31%</u>	

*Casien is officially classified as a competitive import because it competes with uses for non-fat dry milk and soy products. It is not, however, currently being produced in the United States and import restrictions are under study.

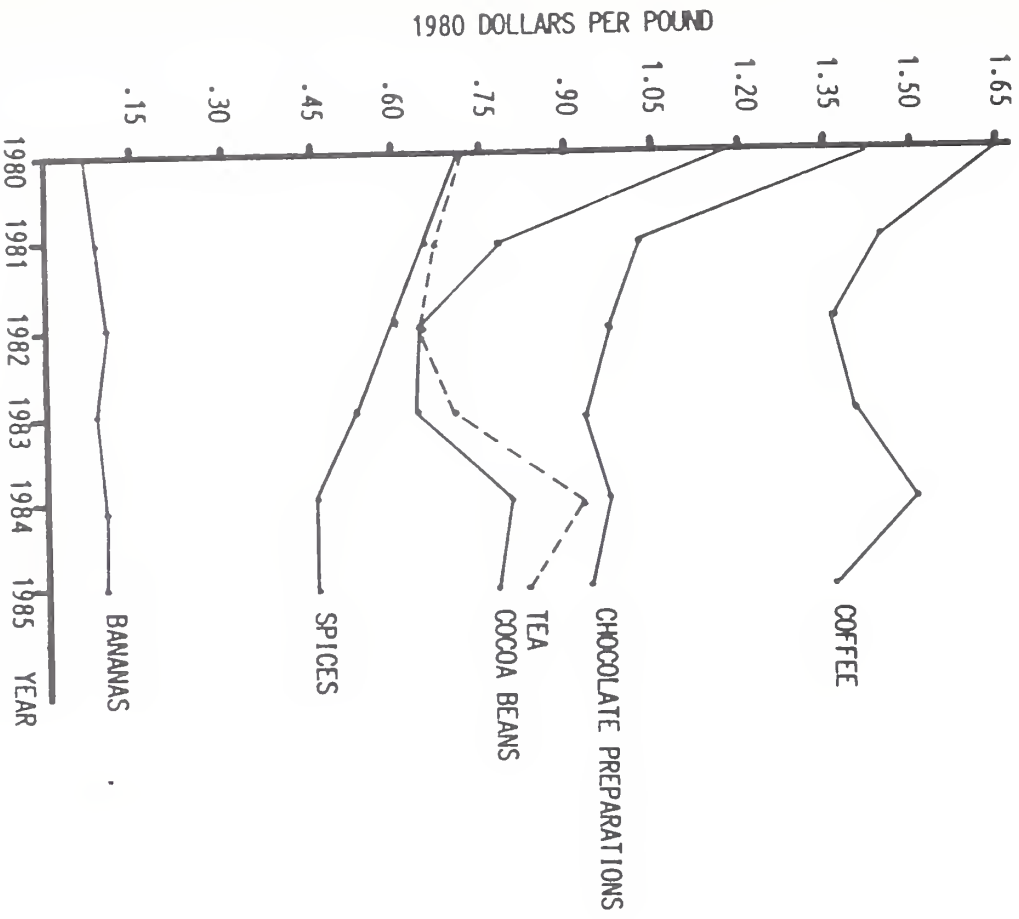
Table 2 Supplementary Food Imports to the United States and Selected Retail Prices, 1980 - 1985

Commodity	Percent of Total Consumption Imported	Unit Value of Imports (nominal \$ per pound)	Unit Value of Imports (real 1980 \$ per pound)	Real Retail Price of Selected Foods (in 1980 \$ per pound)	
<u>Meats (exc. poultry)</u>				<u>Canned Ham</u>	<u>Ground Chuck</u>
1980	6.5	1.14	1.14	2.33	1.83
1981	5.7	1.08	1.04	2.37	1.73
1982	6.6	1.01	.92	2.43	1.63
1983	6.5	1.01	.94	2.51	1.61
1984	6.9	.95	.88	2.37	1.50
1985	7.8	.89	.83	2.40	1.57
<u>Grain products (wheat)</u>	<u>Wheat, flour and products</u>	<u>Biscuits, cakes and wafers</u>		<u>White flour</u>	<u>Whole wheat bread</u>
1980	0.33	.87	.87	.21	.73
1981	0.44	.90	.82	.20	.70
1982	0.54	.91	.79	.19	.70
1983	0.41	.88	.74	.19	.70
1984	0.42	.85	.69	.17	.71
1985	0.39	.84	.65	.16	.66
<u>Sugar</u>				<u>White Sugar</u>	
1980	45.0	.24	.24	.43	
1981	52.0	.21	.19	.37	
1982	33.0	.15	.15	.32	
1983	36.0	.18	.16	.32	
1984	42.0	.19	.17	.32	
1985	36.0	.17	.14	.30	
<u>Fruits</u>	<u>Fresh</u>	<u>Fresh/Frozen</u>		<u>Strawberries</u>	
1980	.26	.18	.18	.64	
1981	.28	.21	.19	.70	
1982	.30	.22	.19	.72	
1983	.28	.22	.20	.68	
1984	.29	.21	.17	.64	
1985	.32	.24	.17	.61	
<u>Fruit Juices</u>	<u>Frozen</u>			<u>Frozen Orange Juice</u>	
1980	13.0	.09	.09	1.18	
1981	24.0	.10	.09	1.24	
1982	39.0	.10	.08	1.24	
1983	32.0	.10	.08	1.15	
1984	56.0	.12	.09	1.26	
1985	39.0	.13	.10	1.31	
<u>Salad and Cooking Oils</u>	<u>Salad Oil and Shortening</u>	<u>Castor, Coconut, Olive, Palm and Palm Kernel Oils</u>		<u>Shortening</u>	
1980	16.6	.33	.33	.77	
1981	17.5	.27	.24	.70	
1982	15.8	.24	.22	.73	
1983	17.4	.24	.23	.75	
1984	15.9	.41	.34	.77	
1985	-	.29	.24	.72	

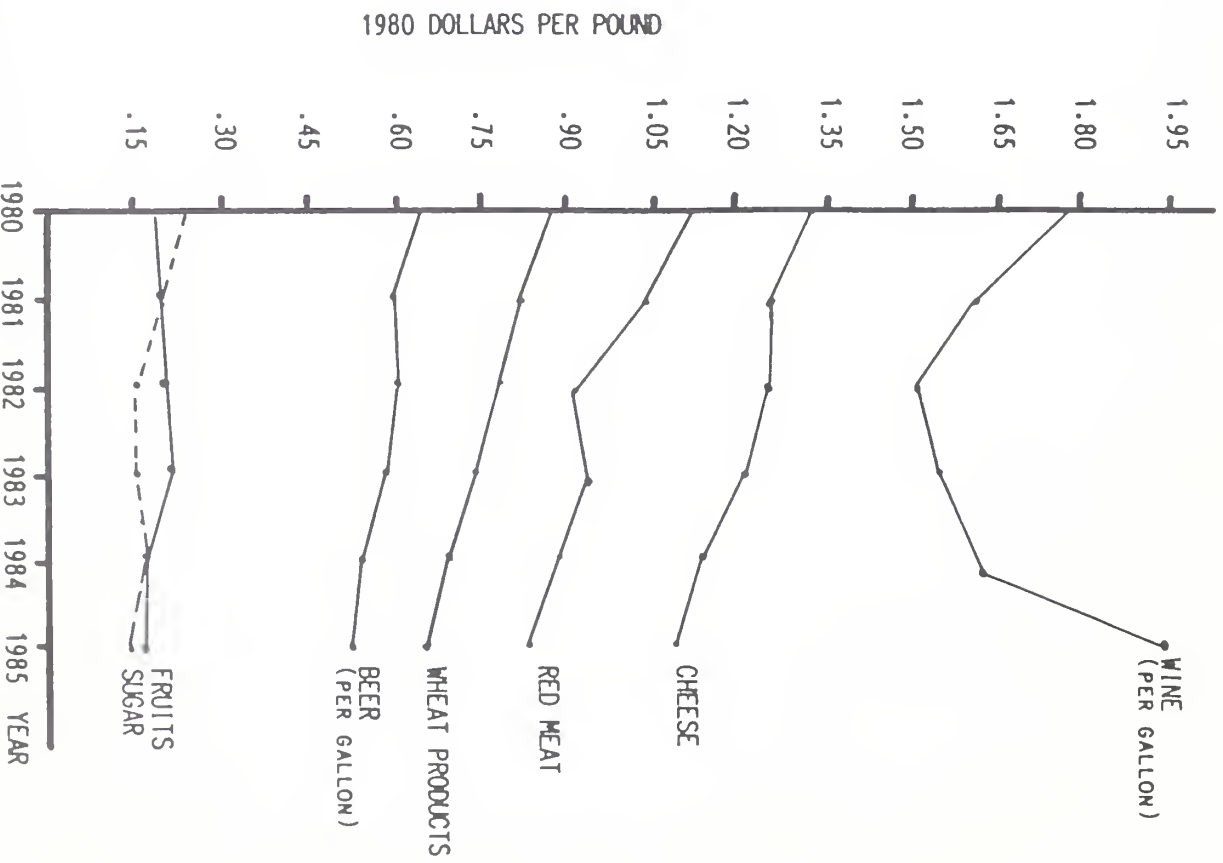
Table 2 (Cont.) Supplementary Food Imports to the United States and Selected Retail Prices, 1980 - 1985

Commodity	Percent of Total Consumption Imported	Unit Value of Imports (nominal \$ per pound)	Unit Value of Imports (real 1980 \$ per pound)	Real Retail Price of Selected Foods (in 1980 \$ per pound)
<u>Cheese</u>				
1980	5.8	1.30	1.30	
1981	5.9	1.34	1.25	
1982	5.8	1.36	1.25	
1983	6.0	1.34	1.21	
1984	6.0	1.26	1.13	
1985	5.7	1.24	1.09	
<u>Wine</u>				
		<u>Per Liter</u>		
1980	21.0	1.77	1.77	
1981	23.0	1.74	1.61	
1982	23.0	1.70	1.51	
1983	25.0	1.73	1.54	
1984	26.0	1.78	1.60	
1985	24.0	1.96	1.94	
<u>Beer (Malt beverages)</u>				
		<u>Per Liter</u>		
1980	2.4	.68	.68	
1981	2.8	.65	.60	
1982	3.0	.79	.61	
1983	3.3	.70	.59	
1984	3.8	.68	.55	
1985	4.1	.68	.54	

REAL PER UNIT IMPORT VALUES
COMPLEMENTARY FOODS 1980-1985



REAL PER UNIT IMPORT VALUES
SUPPLEMENTARY FOODS 1980-1985



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IMPLICATIONS OF DEMOGRAPHIC AND SOCIOECONOMIC CHANGES FOR FOOD EXPENDITURES

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Today's rapidly changing economic and social environment challenges the producers and marketers of America's agricultural products. While day-to-day survival is of paramount importance to firms operating in this dynamic arena, longrun survival and well-being requires understanding the effects a changing populace will have on food desires. A statement made by former Secretary of Agriculture Ezra Taft Benson over 30 years ago is perhaps even more applicable in today's world:

I write these words in a time of uncertainty.
No one can foresee the results of recent
economic and international developments. We
can see, though, the need to understand the
underlying trends and to use them to advantage.

Slower population growth, changing age distribution, regional migration, increased longevity, and altered employment patterns—to list a few significant demographic trends—present an ever changing and uncertain environment within which the food sector must operate and respond.

American demographics continue to change. One of the most pervasive changes potentially affecting consumer food demand and growth rates of many agricultural subsectors is the slowing of the overall population growth rate. For example, the U.S. population grew from 152.2 million in 1950 to 227.7 million in 1980, a 50-percent increase. From 1980 to 2010, Census projects that the population will increase 55.5 million, a 24-percent increase. Thus, on a percentage basis, population growth during the next 30 years is expected to be less than half of the rate of the proceeding three decades. Furthermore, from 2010 to 2040, the population will only increase an estimated 9 percent.

These figures imply that, from 1980 to 2040, the population growth rate will be slower than it has been at any time during the past. After 2050, the

growth rate is projected to be almost zero (0.01 percent per year). These numbers indicate that industries that rely on population growth to fuel expansion must find alternative markets for their products if they are to maintain growth patterns.

These figures and other socioeconomic trends become very important when one considers the tremendous dependence the agricultural sector has on the domestic market. Since 1982, total gross cash income to U.S. farmers has averaged about \$150 billion per year. Exports have declined from over \$40 billion per year to about \$34 billion in 1985. Valued at the farm level, exports comprise approximately 18 percent of recent U.S. agricultural production.

Many agricultural subsectors are almost entirely dependent on the U.S. domestic market. For example, in 1984 domestic civilian meat use actually exceeded domestic production by about 5 percent. Consumption of all dairy products also exceeded domestic production. Domestic civilian chicken consumption represented 95 percent of total production. In fact, field crops are the only major U.S. agricultural subsector for which the domestic market does not absorb over 90 percent of the domestic production.

Because of this dependence, future resource adjustments within many agricultural subsectors are likely to be closely linked to changes in the domestic consumer demand for specific foods.

Before presenting some of our analysis relating to demographic and socioeconomic factors in demand, it is appropriate to mention two limitations when such analysis is used for projection purposes. First, there is an implicit assumption that as an individual moves from one group to another his or her preferences immediately take on the characteristics of the "new" group, regardless of his or her previous identity. Second, the analysis is based on cross section data collected over a short period of time and it is usually assumed that prices are constant across groups. Thus, the observed purchase behavior is for a fixed set of food and non-food prices. No one can be sure that the same consumption patterns would exist under alternative relative price observations.

Given this background and the several caveats, the remainder of the paper will be devoted to presenting some results from a recent study of food consumption by demographic groups using data from the Bureau of Labor Statistic's Continuing Consumer Expenditure Survey for 1980 and 1981. The presentation will be organized as follows: (1) identification of important socioeconomic and demographic groups; (2) expenditure patterns for the groups expected to experience the most dynamic changes; (3) implications for future food demand; and (4) implications for production agriculture.

Consumption Patterns By Demographic and Socioeconomic Group

With respect to implications for food consumption, the following demographic and socioeconomic changes appear to be among the most critical:

1. The slowing of the overall population growth rate with the projected growth over the next 30 years (24 percent) being one-half the growth between 1950 and 1980 (50 percent).
2. Changes in the age distribution toward an older population. For example the median age was 30.6 years in 1982 and is projected to be 36.3 years by the year 2000.
3. Changing geographic distributions suggesting that the Northeast and North Central regions will experience declines in their share of the total population while the South and West will gain population share over the next 20 years.
4. Changing racial mix with blacks becoming a larger share of the total. Blacks currently represent about 12 percent of the population and are expected to account for over 14 percent thirty years from now.

Tables 1, 2, and 3 contain summarized results of statistical analysis of the 1980-81 BLS Continuing Consumer Expenditure Survey designed to determine the net effect on food expenditures due to changes in certain demographic variables. The results are reported in percentages relative to a "base" number as defined in a footnote to each table. In each case, all explanatory variables, except those of interest, are held constant at their mean values. Thus, the analysis is an attempt to measure the marginal impact of certain factors, holding all other factors constant.

Table 1. Simulated Impact of Regional Location on Per Person
Food Expenditures: Selected Foods

Item	Northeast	North Central	South	West
Percent of base <u>a/</u>				
All Food	103.4	96.6	97.6	103.2
Food Away From Home	98.7	98.6	100.0	102.7
Food At Home	105.9	96.2	96.2	103.0
Beef	107.5	96.6	98.3	99.0
Pork	99.1	104.2	99.0	97.4
Poultry	119.2	82.8	103.0	100.5
Dairy Products	104.3	97.9	92.7	106.4
Fruits	106.9	91.0	93.2	111.6
Vegetables	102.9	91.6	100.7	106.0
Fats and Oils	105.0	96.6	94.6	105.2

a/ Percent of overall sample means, holding all other variables constant at mean levels.

Source: [1]

Regional impacts on food expenditures are presented in Table 1. When adjusted for other socioeconomic and demographic variables, regional differences in consumption expenditures for aggregate food groups tend to be small. The most variation appears in the poultry group with expenditures in the North-east averaging 19 percent above the base average and North Central expenditures averaging 17 percent below the base. Expenditures for fruits are nearly 12 percent above average in the West.

Table 2. Simulated Impact of Age on Per Person
Food Expenditures: Selected Foods

Item	Age Group		
	20-29	30-44	65-74
	Percent of base ^{a/}		
All Food	90.9	96.2	100.2
Food Away From Home	148.0	142.3	92.5
Food At Home	69.3	77.7	102.2
Beef	69.1	71.7	97.9
Pork	56.9	68.8	105.0
Poultry	61.5	75.8	98.9
Dairy Products	78.5	86.3	97.0
Fruits	65.5	70.1	127.2
Vegetables	67.7	76.7	108.3
Fats & Oils	71.6	77.5	109.2

^{a/} Percent of the average for 45 to 64 age group average expenditures, holding all other variables constant at mean levels.

Source: [1]

Some regional variation in food expenditures may represent regional differences in average prices over the 1980-81 data collection period. Regional differences might be more important in determining how the food is prepared and consumed than in determining the absolute consumption level.

Table 2 focuses on estimates of how average per capita food expenditures change as the consumer's age changes; other factors held constant. The results are expressed as percentages of average expenditures for the 45 to 64 year old "base" group. Food-away-from-home expenditures are 40 percent to 50 percent higher for persons between 20 and 44 than they are for persons 45 and over. On the other hand, food-at-home expenditures are 20 percent to 30 percent lower for the 20 to 44 age group as opposed to those

Table 3. Simulated Impact of Race on Per Person Food Expenditures: Selected Foods

Item	Nonblack	Black
	Percent of base <u>a/</u>	
Total Food	101.7	90.3
Food Away From Home	102.1	87.7
Food At Home	101.5	91.3
Beef	100.7	95.7
Pork	97.4	116.4
Poultry	95.1	131.8
Dairy Products	105.3	70.6
Fruits	100.8	95.5
Vegetables	101.2	93.0
Fats & Oils	103.2	82.2

a/ Percent of the from overall sample means, holding all other variables constant at mean levels.

Source: [1]

45 and over. Because of this, the at-home expenditures for all the major food groups are less for the 20 to 44 age group than for those 45 and older. Per person expenditures for the following food groups show steady increases with increases in age: pork, fruits, vegetables, and fats and oils. Beef, poultry, and dairy product per capita expenditures tend to peak in the 45 to 64 age group. Within the dairy group, the decline after age 64 is due entirely to fluid milk and cream. Cheese and other dairy product expenditures are higher in the 65-75 age group, other factors constant.

Other factors equal, nonblack households spend more per person than their black counterparts for most food groups (Table 3). Black households' average total food expenditures are estimated to be over 11 percentage points below the average for nonblack families of similar characteristics. Across food groups, the results imply that blacks and nonblacks allocate their food dollar in substantially different ways.

Nonblacks' per capita expenditures for dairy products average nearly 35 percentage points above the per capita expenditures by blacks. However, blacks tend to spend more for pork and poultry. In fact, the results suggest that average per capita expenditures for poultry are nearly 37 percentage points higher for blacks than nonblacks. Among the meats, census projections that blacks will represent a larger proportion of the total population will reinforce the growth in poultry consumption versus beef consumption.

Projections

There is strong interest in the implications of changing demographic and socioeconomic characteristics on long-term food demand patterns. An analysis of demographic differences in food demand was combined with projections of changes in age distribution, regional shifts, racial mix and total population growth to obtain estimates of the impact on future expenditure patterns. It is beyond the scope of this speech to detail all of the assumptions underlying the projections for changes in the demographic characteristics over the next 20 years. Additional specific assumptions are detailed in [1].

Results summarized here are from projections based on the following major assumptions:

- a. The U.S. population will grow from 239 million in 1985 to 276 million in 2005. This is the Bureau of Census Middle Series projection [2].
- b. Blacks will increase from 12.2 percent of the total population in 1985 to 13.7 percent in 2005.
- c. The regional population distribution, expressed as shares of the total U.S. population will change as follows [1]:

Year	Northeast	North Central	South	West
			Percent	
1985	20.5	25.1	34.2	20.2
2005	16.4	21.4	37.8	24.4

- d. The age distribution, expressed as a percent of the total population will change as follows [2]:

Age Group	1985	2005
		Percent
0-9	14.7	12.7
10-19	14.7	14.0
20-29	18.1	13.2
30-44	21.8	21.2
45-64	18.7	25.6
Over 65	12.0	13.1

The demographic determinants of demand considered in the projections are race (black-nonblack), age distribution, geographic distribution, and size of the population. Projections are also made under alternative assumptions of growth in consumer purchasing power. Although commodity prices and consumer tastes and preferences are known to be important factors influencing food consumption over time, economists generally have little knowledge about the future course of these factors. For purposes of this study, relative prices and consumer tastes and preferences within the defined categories are assumed to remain stable at levels existing during the 1980-81 period.

Table 4 contains the projected changes in per capita consumption between 1980 and 2005 due to projected changes in demographic characteristics and to assumed income growth. Columns 1 through 4 contain the estimated impacts of changes in individual factors, assuming all else is unchanged. The last column, labeled "Total", contains the net estimated change after accounting for the projected adjustments in all variables.

Table 4. Estimated Percentage Change in Food Expenditures, 1980 to 2005.

Food Group	Effect Due to:				Total _{b/}
	Age Distribution	Regional Distribution	Race	Income _{a/}	
				----- Percent -----	
All Food	1.7	0	-0.2	21.1	22.7
Beef	3.0	-0.4	-0.1	13.4	16.1
Pork	5.7	-0.3	0.4	8.2	14.2
Poultry	5.5	0.1	0.6	4.4	10.8
Cereals & Bakery	3.1	-0.9	-0.2	8.4	10.4
Dairy Products	2.2	-0.1	-0.7	7.7	9.0
Fruits	4.1	0.4	-0.1	13.4	18.1
Vegetables	4.5	0.6	-0.2	13.5	18.7
Sugar & Sweetners	2.1	-0.2	-0.4	8.2	9.8
Fats and oils	4.2	-0.1	-0.4	9.8	13.6

a/ Assumed 2 percent per year growth in real per capita income.

b/ Net adjustment after accounting for projected changes in all variables.

Source: [1]

Of the three demographic characteristics (age, regional distribution, and race), changes in age distribution are likely to have the biggest impact on per person food demand. Age distribution changes are projected to increase per capita food expenditures by 1.7 percent over the 25 year period. Regional population distribution changes are expected to have no effect on total food expenditures and changing racial mix will have an expected slight negative impact.

The change in age distribution has the most impact on pork and poultry expenditures, up 5.7 and 5.1 percent, respectively, over the 25 year period. The least impact is expected for dairy products (+2.2 percent) and sugars and sweeteners (+2.1 percent). Age distribution changes are expected to be a positive force for per capita expenditures of all major food groups.

As indicated by the result for total food, per capita expenditures for the identified food groups are expected to be influenced little by changes in the regional population distribution. Beef, pork, cereals and bakery products expenditures would experience a slight decline, other factors constant. Vegetable and fruit expenditures are projected to increase slightly. Regional shifts should have a negligible impact on per capita expenditures for poultry, dairy products, sugars and sweeteners, and fats and oils.

While racial distribution changes will generally have a negative impact on per capita expenditures, poultry and pork are expected to benefit from the increasing proportion of blacks in the population. Dairy products, sugars and sweeteners, and fats and oils are hurt the most by this trend.

Far overshadowing the implications of changes in demographic characteristics are the projected changes in per capita food expenditures due to income growth. If we assume an average 2 percent per year growth rate for per capita real income, total per person food expenditures are projected to increase 21 percent over the 25 year period. Much of the total income response, occurs in food-away-from-home expenditures which are estimated to grow 36 percent.

Income growth benefits the beef, fruits, and vegetable food groups the most. For each of these, the impact of 2 percent annual growth in real income is an estimated 13.5 percent growth in per capita expenditures between 1980 and 2005. Poultry appears to benefit the least from income growth, other factors constant.

The scope of this presentation prohibits going into much detail concerning the projections. However, it is appropriate to note that these projections are for per capita expenditures, assuming fixed relative prices. As supply and demand conditions change over time, relative prices have to change and the expenditure growth patterns suggested here could be altered dramatically. Also, these results implicitly reflect changes in the quality and product mix of purchases. For example, the strong income-generated growth in dairy products expenditures reflects high growth in cheese (17.7 percent) and other processed dairy products (11.9 percent) categories and very little impact on milk and cream (1.2 percent).

The net effect of projected changes in demographics and an assumed 2 percent real income growth is given in column 5 of Table 4. Overall, per capita food expenditures are expected to grow 22.7 percent. The largest increases are anticipated for beef (16 percent), fruits (18 percent), and vegetables (18.7 percent). The only two categories for which the net estimated growth is less than 10 percent are dairy products and sugars and sweeteners.

Table 5. Estimated Percentage Change in National Total Food Expenditures, 1980 to 2005.

Food Group	Percent Growth ^{a/}
All Food	49.3
Away From Home	62.7
At Home	39.8
Beef	41.3
Pork	39.0
Poultry	34.9
Cereals and Bakery Products	34.4
Dairy Products	32.7
Fruits	43.7
Vegetables	44.4
Sugars and Sweeteners	33.6
Fats and Oils	38.3

^{a/} Assumes 2 percent annual income growth and Bureau of Census Middle Series population growth projections.

Source: [1]

So far we have discussed the outlook implications of demographic change and economic growth on per capita food expenditures. Another very important factor driving growth in food demand is the expansion of the total population. As indicated earlier, the Bureau of Census middle series projections suggest that nearly 40 million additional people will have to be fed in the year 2005 compared to 1985. Table 5 contains estimates of the percentage changes in total national food demand between 1980 and 2005, after accounting for projected per capita expenditure changes and changes in total population.

Total food expenditures are projected to increase 49 percent. Food away from-home expenditures jump 62.7 percent compared to 39.8 percent expansion for at-home expenditures. Recall that these projections are made under the assumption of constant real prices; thus the estimates for individual food categories represent a "rough" estimate of volume changes. Note also that the individual food groups represent at-home consumption only. To the extent that the away-from-home market grows for particular foods, these projections tend to understate total expenditure growth for individual food groups.

Population growth is a dominant factor affecting food expenditures expansion. Therefore, the variation of growth levels between food groups as indicated in Table 5 is less than that exhibited by the per capita projections. The largest projected increase is for vegetables (44.4 percent) and the smallest is for dairy products (32.7 percent).

Implications For Agriculture

While it is beyond the scope of this paper to detail all the implications for agriculture, some general observations relative to implications for resource use are appropriate. If total beef requirements for domestic consumption were to increase the 41 percent projected for at-home use between 1980 and 2005, the number of cattle marketed would increase from about 45.6 million head to 64.4 million head. This assumes constant average weights and beef yields. The 64.4 million head is only 14 percent more than the 56.4 million head marketed in 1977. The projected increase in pork consumption implies that the domestic market will use about 39 million head of hogs more than the record 100 million head marketed in 1980; again assuming constant average weights.

Between 1955-59 and 1979-83, a period of 25 years, yields for major crops increased as follows: corn (110 percent), wheat (58 percent), sorghum (94.5 percent), and soybeans (29.5 percent). If we assume trend growth rates in average crop yields, it is obvious that the projected increases in meat and dairy product demand will not require net additional acres of land for feed production purposes. This is consistent with historical patterns. In 1950, roughly 295 million acres were required to produce the feed and food needed for domestic use. Thirty years later, domestic uses required only the output of 115 million acres. The trend for average yield increases to be larger than domestic demand growth rates is not expected to be reversed.

Dairy is an example of acute discrepancy between the growth in domestic commercial demand and in milk yields per cow. During the 1955-59 period, average milk production per cow was 6,307 pounds per year. By 1979-83, that average had nearly doubled to 12,094 pounds. If we assume that milk yields increase over the next 25 years in the same proportion as the increase from 1955-59 to 1979-83, the projected demand expansion suggests that only 7.5 million head of milk cows, including heifers that have calved, will be required in the year 2005. This compares to 10.8 million head on farms in 1980.

Admittedly, the above stated implications are oversimplified, but they do illustrate the basic general conclusion that demographic and socioeconomic factors are not likely to generate sufficient domestic demand growth over the next 20 to 25 years to offset likely increases in productivity. This implies, of course, that resources may have to be shifted out of agriculture or that we will have to experience substantial growth in foreign demand to maintain constant real prices.

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RESPONDING TO CHANGES: THE STATE'S ROLE

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* In many areas of the country rural economies are in rapid and decisive transition. State governments can influence the direction and impact of this change. In some cases state intervention can make the change positive for the economy and in other cases it can mitigate the pain for those persons negatively affected. This paper focuses on state intervention with positive impacts by discussing several tactics which can achieve a successful development strategy in the current era of budget constraints, economic change, and market orientation.

Before discussing specific approaches, six observations establish a policy environment for the succeeding discussion and are essential conditions for the tactics enunciated.

SIX OBSERVATIONS

Observation One: The rural economy mix is similar to the urban economy, but certain rural communities are significantly dependent on natural resources.

¹. Much of this presentation is drawn from the authors' practical experiences. Smith served as the Maine Commissioner of Agriculture, Food and Rural Resources for over six years and worked closely with the governor as an advisor on economic development; he was also an associate administrator of a USDA agency involved in the rural economy. Redfield worked as Associate Commissioner and as the attorney for the Department. Both were members of the Finance Authority of Maine. Perspectives gained in these positions have been reinforced by work in academic positions where the opportunity exists to be more reflective and analytic.

Rural economies are as dependent on manufacturing as non-rural economies. Thus manufacturing troubles are shared between urban and rural workers and businesses. Rural economies also have as large a share of the service economies as urban economies. Growth and opportunities are likewise shared.

While in overall national terms rural economies are not unduly dependent upon agriculture and natural resource industries, many individual rural communities are dependent upon these sectors. Because so many communities are dependent on natural resource industries (including agriculture) and because natural resources offer unique advantages to rural areas, natural resources rightfully assume a prominent role in many rural development strategies.

Observation Two: The number of full-time farmers will continue to decrease; those remaining will be larger and will increasingly continue to bypass the local business community.

In the 1930s seven million U.S. farms were serviced primarily by local business firms. However, as farm numbers declined to the current 2.3 million and as the size of farms increased, a substantial number of the remaining larger farms by-passed the local economy by purchasing their inputs directly from manufacturers or central distributors outside the region. As farms continue to centralize and become larger, they will increasingly by-pass their local economies.

Technology is the driving force behind the centralization of farms and there is little likelihood that the current pattern will change significantly. Smaller farm units may well be as efficient as larger units. However, as long as technologies allow one manager to control more and more output, centralization will continue as managers expand their output to increase their profits. A successful intervention strategy requires an understanding of this basic economic force.

Observation Three: Many federal activities cannot successfully be replaced by the state.

In some cases, state fiscal resources cannot match federal resources. In other instances, because of the constitutional protection of interstate commerce, certain efforts are futile if undertaken only on a state level. For example, the federal government can support the price of a commodity like milk and increase the income to milk producers. By limiting the importation of milk, the higher prices can be passed from consumer to producer through the marketing system. In comparison, states have no constitutional way to prohibit the flow of products into their states in order to maintain a commodity price support program.

Observation Four: It is futile for state governments to significantly countermand market forces, but supplementing market functioning can pay dividends.

While state governments have attempted to countermand market forces, such efforts eventually fail because of the budgetary and constitutional limits on the kinds of programs they can implement. The failure of these attempts often results in substantial economic and political repercussions.

However, markets often are not efficacious, especially in allocating resources to meet long-range and community objectives. States can improve the working of the marketplace by internalizing external costs and benefits and by providing participants with better knowledge in areas like evaluating risks and determining values of future resources. For example, state government is in a better position to accurately consider the long-term return to forest management or the long-term costs of soil depletion than the private sector where considerable value is placed on more immediate returns. Financial public support to attain proper forest and soil management reflective of long-term optimal returns ultimately improves the workings of the marketplace. Similarly, state government can better evaluate the benefits of a new technology to the regional economy than can a private bank which must consider the risk to its stockholders of failure of an individual adopter whom the bank is considering financing.

On the other hand subsidizing an industry that cannot be sustained without the subsidy simply because it currently exists is counter to the market and results in a less efficient economy. Contrasted to creating long-term resource management or properly evaluating the risk and benefit to the region of a new technology, this kind of subsidy represents futile public policy. A corollary of this observations is that social needs are better met by direct income transfer than by market intervention. If states wish to supplement farm income they are more likely to be successful if they do so directly than through price supports or permanent subsidy of inputs.

Observation Five: States should focus on what they do well.

State governments are particularly adept at collecting, analyzing and disseminating information and they have unique interest in doing so for the benefit of their citizens. This function is especially crucial to rural economic development which is often dependent on small firms which individually lack the capacity to perform an adequate information function. The federal government cannot show preference for the needs of any particular state and large firms will not necessarily serve the

general welfare. As information becomes a more crucial input to the success of firms, the state's function here takes on increasing importance.

Observation Six: States should maintain awareness of non-economic objectives, but should minimize efforts to achieve these through intervention in the marketplace.

As state government determines which tactics and programs to adopt to strengthen rural communities, it is important to recognize that social as well as economic public objectives must be considered. These "non-economic" purposes can be integrated into the marketplace either by the government's internalizing external costs and benefits or by non-market tactics. In all cases it is well to undertake both kinds of activity explicitly so the rural development strategy can be chosen and acted upon comprehensively and rationally.

RURAL ECONOMIC TACTICS

Given the above observations, a state's rural economic strategy might involve the following six tactics:

- I. Determine areas of competitive advantage and target resources accordingly.²
- II. Finance change, transition and demonstrations but not traditional ongoing economic activity.
- III. Provide marketing and management support to small firms.
- IV. Support natural resource management on some long-term optimal return basis.
- V. Support part-time and alternative farming (value-mode agriculture) that uses local products and services.
- VI. Be prepared to support transition out of the rural economy.

². As used in this paper competitive advantage refers to the production and distribution of goods from one area into a specific market at a cost less than or comparable to similar goods from other areas. [This is to be distinguished from comparative advantage which in economic literature refers to the most efficient production of some goods relative to other goods in one area compared to another area; it is further distinguished because competitive advantage here includes distribution costs.] This distinction is particularly relevant to the discussion of value-mode agriculture, infra.

I. Determine Competitive Advantages and Target Resources
Accordingly: State governments have a unique responsibility and capability to determine the types of industries likely to have the best competitive advantage in the state. In these respects states are unlike the federal government which has little interest in defending one region against another and unlike private firms which have an overriding interest in near-term returns and often misstate the best long-term solutions for a region.

Competitive advantages shift through time often because of change in exogenous forces (those outside the region). For example, new technologies may prove more advantageous in one area than another; shifts in consumer tastes may encourage increased production with accompanying lower costs in specific areas; changes in relative prices of inputs due to changing supply and demand situations can shift advantages between regions. In other cases, however, advantages can be shifted by changes in endogenous factors (those controllable within the regional economy). Many endogenous factors can be positively influenced or created by state government and should be considered as part of a rural economic strategy.

The case of natural resource industries provides good examples. Certain natural resource manufacturing and processing firms locate in rural areas to minimize the costs of transporting raw products to their plants. The disadvantages of such locations are distance from market and the lack of economies associated with areas of high population and economic activity, so-called agglomeration economies. With proper intervention state government can expand the advantages of raw product supply and diminish the costs of transportation and lack of agglomeration economies.

Classic location theory -- that plants generally locate either at the source of raw product or in the marketplace depending on the relative costs of transporting raw product and finished product -- suggests interventions to maximize advantages of locating at the resource site.³ A state could intervene in at least three ways to encourage plants to locate at or remain near that state's raw product supply. First the state can promote the production of raw products to assure a consistent supply of quality product at competitive prices. The principle concept is to support the dispersed raw product producers rather than the

³. Although this classic theory is incrementally being supplanted by one that focuses on product or service distribution it is still a valid concept for certain heavy industries including pulp and paper manufacture and food processing.

unique processor.⁴ This approach overcomes a substantial risk to the state since the failure of one farm in 500 is relatively inconsequential, especially when there are buyers for the failed farm, but the failure of a single processor purchasing from those 500 farms has serious economic and political consequence. It is more appropriate for the private market to decide which particular processor is chosen.

A second method of intervention to attract firms to rural areas is to reduce the disadvantage to the manufacturing firm from the lack of agglomeration economies.⁵ This can be done by focusing on agglomeration economies to create localization economies which accrue to a firm because there are several other similar firms in the region. While the other aspects of agglomeration economies are not susceptible to state intervention,⁶ localization economies can be created by locating several similar plants, e.g. food processing, in a general area. States can and should incorporate this kind of targeting into their rural development strategy.

A third kind of intervention is to minimize transportation costs from the rural area to the market areas. An infrastructure support program which realistically considers economic plant location is essential. That means that transportation systems must be planned and developed in a rational way to minimize costs to those firms whose location in the state provides a competitive advantage and not simply by responding to existing economic and political pressure to improve services to a given area.

A more recent use of targeting infrastructure is to fully exploit the potential for telecommunication to shift the competitive relationships of various industries between rural and urban areas. As discussed above, one of the primary barriers to rural economic development is distance. By their very nature, rural

⁴. This can be done with a number of programs to assist producers, for example by creating technology transfer programs and targeting other financial assistance so producers remain competitive.

⁵. Agglomeration economies can be classified as a) large scale economies, b) localization economies and c) urbanization economies. Large scale economies occur when one firm is large enough to reduce the price of its inputs by producing them itself or purchasing in volumes at less cost than they can be purchased otherwise. Urbanization economies are those savings attributed to a large amount of economic activity existing in one place.

⁶. Large scale economies are achieved by the firm itself and urbanization economies simply do not exist in rural areas.

areas are costly to service because the distance from markets and services results in higher transportation costs. However telecommunications can virtually eliminate the costs associated with moving data, information and communication over distances. Therefore certain kinds of information transaction industries can be competitive with little reference to site location. Recent examples of major city banks in the Northeast locating information transaction functions in the Midwest are examples of this principle. So too is the development of Freeport, ME around L.L. Bean. Because it relies upon mail order sales, Bean's requires a certain level of telecommunication service and costs. Once located in a rural area that provided the necessary service, the existence of that retailer itself attracted many other retail firms. In these examples it might well be efficacious for the state itself to provide certain telecommunication infrastructure to enhance the competitiveness of rural locations.

Developing other economic activities based on natural resources and the rural environment is proving to be a good tactic in some cases. Tourism has been a traditional enterprise in rural areas, especially where unique natural resource attractions like lakes or mountains exist. An increasing number of New Englanders are using their rural homes for Bed and Breakfast facilities and the number of people offering farm vacations is apparently increasing. Some regions have developed more day trip attractions. For example Freeport, ME, by building on the existence of L.L. Bean, developed a retail outlet center substantially removed from the metropolitan area of Portland. Reading, PA successfully converted manufacturing facilities into retail outlets as part of a planned tourist strategy. Another version of this pursuit, and one which has been a primary reason for substantial growth in certain non-metropolitan areas over the past decade, is the development of retirement facilities in rural areas. It should be recognized, however, that these service oriented strategies require a certain natural ambience; not all regions are equally attractive. A successful strategy requires accurate evaluation of the region's resources. The need for proper evaluation and targeting are as necessary in these strategies as in those described for the natural resource industries.

Unlike the previously described tactics -- influencing long-term costs through raw product supply, enhancing agglomeration economies, improving transportation and telecommunication infrastructure, or targeting nature-based industries like tourism, most studies of economic development indicate that direct subsidies, including tax rebates, do not efficiently determine plant location. Accordingly, such techniques should not be part of a sound rural economic strategy. If a firm is provided indefinite subsidies to exist in an area, and those subsidies are not based on a realistic assessment of competitive

advantage, the firm is likely to fail as the subsidies are discontinued or as its competitive position weakens. Since constant or increasing subsidies are unrealistic, the firm's ultimate failure is predictable and will inevitably cause substantial negative dislocations, the threat of which was probably the impetus for the subsidy initially.

II. Finance Change, Transition and Demonstration, But Not Normal Ongoing Economic Activity: Financing assistance to existing or new firms in the form of loans and loan guarantees is often the bulwark of state economic development programs although such development finance is more properly only one of many tools. Keeping in mind the premise that government has a proper role in promoting more efficient markets but not in countermanding them, the state does have a legitimate role in development finance, but not an unlimited one.

As a general rule, if existing firms cannot get adequate private financing for traditional and normal business activity, the state probably should not be providing the financing. The state is not in any better position than the private credit community to evaluate risk in traditional businesses, nor is there any particular reason for the state to compete with the private sector to offer credit for typical ongoing operations. Indefinite public credit is not sustainable unless it serves some clear public purpose -- a case that is often difficult to make for public financing of existing private firms.⁷

In contrast, the state does have a role in financing new technologies or products that the private credit system may find too risky. In some industries this need is met by "gap financing" that takes a process or product from the demonstration stage into production; however, historically private credit institutions have not served to provide such financing especially to mature industries. The federal government has served part of this need in agriculture through the funding of research conducted at the land grant universities, but even the federal government has not supported financing the early adoption of the technologies so developed. Gap financing in the natural resource sector is an excellent niche for state government rural development programs.

⁷. An exception to this general case may arise when the private credit sector is not adequate to serve the area. However, given the current political climate regarding market orientation, the solution to such inadequacy is probably to develop a strong private credit sector rather than substituting state government directly.

Oftentimes finance programs need to target specific technologies in order to build sufficient demand for them to attract private engineers, consultants and suppliers. The Potato Market Improvement Fund in Maine created such a critical level of demand for technologies and equipment to build or retrofit certain potato storage and packing facilities. A \$5 million revolving loan program funded by a general obligation bond issue attracted adequate attention to encourage equipment manufacturers, consulting engineers and a University agricultural engineering department to direct resources at providing technology and equipment to that specific market.

Vermont has adopted a more general loan program with similar objectives of change. Vermont uses its modest²³ direct loan program to finance new crops, products and technologies, focusing on transitioning existing dairy farmers into alternative and complementary ventures. State intervention could also focus on new products by targeting value-added processes that allow the producer to sell a product with higher value to a shifting consumer market. Such programs, in effect, transition farmers out of full-time farming into marketing and processing, with farming supplementing the new activities.

In financing new technologies and innovations states should not limit themselves to loans and loan guarantees. Equity capital, in some cases, may be a preferred technique where patient capital is needed or where heavy debt service nullifies otherwise promising ventures. The development finance strategy should also include grants. Although used on a limited basis by most states, modest grants, whether or not accompanied by other techniques, can prove to be an effective tool for encouraging change, transition and innovation.

III. Provide Marketing and Management Support to Small Firms: The rural economy relies heavily upon small businesses which are often established by local entrepreneurs. Farms and farm service industries seem to be a good breeding ground for production entrepreneurs. But rural businesses are too often weak in marketing and management skills.

Perhaps because of their initial production orientation, too many rural business people view the concept of marketing as how to promote and sell the products already produced rather than as how to determine what consumers want in terms of product specification and services and then producing for that defined market. In many cases small businesses neither have nor believe they can afford adequate marketing capability. States can properly assist

²³. An expanded yet targeted credit program will be considered by the next legislature.

them to form groups to purchase such services cooperatively or provide such service directly from the public sector, possibly on a fee for service basis. Collecting market information⁷ is a valid function of state government, and, as discussed earlier, compiling such information is work that states generally do well.

The need for management training and information is no less important. Successful management of the firm's resources is essential to its competitive position. Management is a science; it can be learned, and many entities teach it. Public and private universities and colleges, the Cooperative Extension Services, vocational technical systems, adult education networks, community colleges, federal government agencies, private creditors and private consultants all provide business management education in one form or another. To strengthen rural businesses, the state has a dual responsibility in this area: 1) to identify and then coordinate the various existing programs, and 2) to create necessary programs to fill any deficiencies. In addition, the state should make adequate business management skills a prerequisite for other development program benefits. Thus, for example, no financial support should be provided to firms without sound and demonstrated management capability and no production support, financial or otherwise, should be provided natural resource production firms without adequate marketing plans.

IV. Support Natural Resource Management on Some Long-term Optimal Return Basis: The private sector has a distinct bias toward undervaluing the advantages and returns from long-term resource management. Returns to timber management are far in the future with much uncertainty for the firm in the interim; consequently investment in long-term maintenance and management of the forest resource may not be worth the cost for a private firm. Likewise, farmers usually cannot recover the costs of soil conservation during their lifetime. Fisheries present a related management problem. Because fish are a common property, those one fisherman does not take are available to a competitor, creating no incentive for long-term management on the part of private individuals or firms.

In all these cases where the market fails to achieve long-term resource management state governments need to assure that the natural resources are managed for long-term optimal returns through the use of government incentives and regulatory control for proper forest, soil and water, and fisheries management. Resource management needs to be viewed as part of rural economic

⁷. This information might include data on consumer trends and projections, competitive prices and production capabilities, as well as on costs of alternative transportation systems.

activity. Appropriation and spending decisions need to be considered in light of the location theory discussed earlier. Investment should be made in those resource management programs with an advantageous effect on the long-term costs of raw product and on the future competitive position of a region's industries.

V. Support Part-time, High-Value or Alternative Farming (Value-Mode Agriculture) That Uses Local Products and Services: States should exploit, for the benefit of rural economies, the existing movement out of full-time, traditional production farming. The ways farmers are now attempting to maintain family income is leading to a bifurcation of U.S. agriculture, resulting in two types of farming that effect rural economies differently. This bifurcation arises from the basic impact of the force of technology which, especially on the production side, has permitted farm managers to profitably control an increasing amount of farm inputs and outputs. Although most technical economies of scale in farming may be reached at a rather modest farm size,¹⁰ skillful managers can control much larger units, thus increasing the volume from which they receive their return. Such expansion of farm units, which can be referred to as production-mode agriculture, leads to reductions in product prices and to corresponding decreases in margins per unit returned to management.

As production-mode managers expand, other farmers are forced to accept lower returns, increase output, or increase the margins on their managerial and labor efforts. As farmers choose these latter options, the bifurcation of U.S. agriculture occurs. Those that seek to increase family income by increasing their return to labor and management other than by increasing the scale of operation are referred to here as value-mode agriculture. These farmers increase the value of their output products, displace purchased inputs with their own management and labor, and/or acquire additional income besides their farm production. Whether by selling their products to local markets, by utilizing local source inputs, or working in farm-related or off-farm jobs, value-mode farmers participate substantially more in their local communities than do production-mode farmers.

Given this distinction between production-mode and value-mode agriculture a wise state strategy would support value-mode agriculture. Conscientious employees come from the ranks of farmers, many of whom do not want to leave the region, preferring to remain in a rural area and on the existing farm with some farming endeavors. State policies should provide opportunities to work off farm but remain on the farm in a value-mode opera-

¹⁰. Some studies indicate less than two full-time person years.

tion. In this way the existing labor pool can be used as a drawing card for economic activity. Additionally, learning to farm with fewer purchased inputs and adding value to output may provide insights for remaining traditional farmers. The pay off to such support may be very substantial in the future.

V: Support Transition Out of the Rural Economy: If adequate economic activity cannot be sustained in a particular rural area, states should adopt policies and programs to assist in geographical transition. Where farming does not retain its competitive advantage, it is incumbent on state government to make it appropriate to leave farming. Because of deep roots and the felt responsibility to preceding generations, leaving the farm often becomes a traumatic experience for many farmers. The trauma is sometimes exacerbated by state policy which creates visible programs to encourage people to enter or remain in farming but has no equivalent support for those leaving farming for other occupations. This approach implies that farming is the most noble of occupations, while ignoring other enterprises which, if we believe in the marketplace, are of higher social value. Education, retraining and direct financial support could balance the scales for those farmers choosing to leave. Since occupational migration from full-time farming is inevitable, it should be viewed in a positive rather than negative light.

PROGRAM DEVELOPMENT AND IMPLEMENTATION

The tactics discussed here can be implemented with a number of diverse programs.¹¹ Public participation, especially local involvement, is crucial in achieving rural economic development. It is important, however, that such involvement be sought at the program development stage when input can be measured against some objective standard rather than at the point of implementation when local partiality to a particular project cannot be easily balanced against overall development objectives. A successful rural development strategy integrates this public participation with appropriate state capabilities and resources.

¹¹. By way of example these include planning assistance; development finance authority; technical and grant assistance for resource management and value-mode farming; occupational retraining; and relocation grants.

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THE CRISIS IN AGRICULTURE * A NEBRASKA SOLUTION

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America is changing, and with it the rural farm economy. Unfortunately, many of the most recent changes have been negative, forcing a radical reassessment of how America's agricultural economy will exist in the next few years and beyond. The problems facing agriculture today have as their origins many different sources and circumstances. Common sense would thus indicate that any programs proposed as solutions to the agricultural crisis must also have a broad spectrum of alternatives to offer. Additionally, we must recognize that though we initially see crisis, there may be opportunity as well. Finding ways for families to survive on the family farms of America may well be the new frontier for us to explore as we enter the twenty-first century. Indeed, finding those ways might be critical to our own survival.

This paper will explore five major areas of the agricultural crisis: background on its extent; problems facing possible solutions; Nebraska's innovative response; the need for rural revitalization; and the outlook for the future.

The problems in agriculture affect nearly all aspects of American business in some way. If agriculture is experiencing difficulty chances are that the difficulty is felt in the steel mills of Ohio as well. In order to understand how this happens, we must first understand that all modern economies are interrelated. For example, the steel worker may find himself out of work because there is not enough demand for new tractors, combines, thrashers, or other farm machinery. As the demand for the machinery decreases, so does the need for people to supply the raw steel needed in its production. The Farm and Industrial Equipment Institute indicates that production of wheel tractors in the January through September period of 1986 is 7.1% below that of 1985. In Iowa there was a 22% decrease in the sale and distribution of farm machinery from July of 1985 to July of 1986.

These numbers become particularly significant in a state like Nebraska when you consider that 21% of all jobs are on farms, ranches, or other food related industries: 40% of all manufacturing jobs are agriculturally related: and 64 of 93 counties are highly dependent on farm income.

A study done by Wharton Econometric Associates estimates that approximately 175,000 jobs will be lost nationally if projected large scale losses in agriculture occur. They estimate additionally that the lower employment and reduced personal income will increase the federal debt by \$13.7 billion. A second study completed by University of Missouri economist Abner Womack indicates that fully 30% of American farmers are experiencing financial stress and that 15% of American farmers will find themselves out of farming within five years.

It is important to remember that a poor agriculture economy can exhibit its effects in various ways. Two common methods for determining the severity of the crisis we are currently experiencing are noting the number of bank closings and the number of farm and ranch foreclosures. In Nebraska in 1985, there were 13 bank closings. Through September 10 of this year, there have been 8. In 1985, Nebraska had 215 farm or ranch foreclosures. Through September 30 of this year that number had leaped to 268. From these statistics we can see that the problem is extensive and will likely stay as bad as it is or get worse before it gets better. In Nebraska, we estimate that the number of farms will continue to decrease from 4% to 6% annually. There are approximately 57,000 farms left.

The decline of the agricultural economy can be felt throughout an agricultural state. For example, total bankruptcies (not just those in farming) have increased from 1,711 in 1985 to 2,185 in 1986 for the January 1 - July 31 period. Not surprisingly, taxable retail sales have declined each year since 1981. The obvious impact of these two factors on state revenue is unquestionable.

One of the most difficult problems facing any solutions which are proposed is the acute lack of funding. But before any commitment to spending money can be made, a careful analysis of the crisis and its extent in a particular state must be available. Without such an analysis, it is difficult for the public to recognize the actual impact of a financially stressed farm economy, and the need for action. Once public perception of the crisis is heightened, public and private sector money must be made available and in large enough quantities to make a difference. Much like a fire, simply squirting a few dollars here and there will not stop the consumption of American farms by the burning agriculture economy.

A secondary problem encountered in serving displaced agriculture workers is the workers themselves. Many financially stressed farmers and ranchers entering a program neither see themselves as displaced nor expect that they will be in the future. The result of this grieving stage when they attempt to assimilate and address their situations, is that all a program can do is provide financial counseling on ways for them to remain in farming. Only later, usually four to six months, do the participants accept the reality of the crisis and begin to explore alternatives to farming. The result of this independence is that many of them must be left alone to decide for themselves how and when to make a career and lifestyle change. Unfortunately, many cannot or will not make that decision until there are no other alternatives available and they have no place else to go. They will fight making a final decision until they have exhausted all options which would allow them to remain in farming.

In Nebraska's approach to the needs of rural workers and communities, it was necessary to first decide what the thrust and intent of our program would be.

The Agriculture-In-Transition program was developed as a comprehensive solution to the comprehensive problem we faced. As we had intended, its main intent was to allow farmers and ranchers to stay on their farms while simultaneously exploring other options. Because we believe that the problems face not only the farmer but all of the members of the household, we utilize as many members as we can in the program. For example, off farm income is imperative for the farmers to continue paying debts while continuing to work the land. When you consider that the average cash income from farming last year was just \$7,000, it is easy to understand why it is important to have some other method of bill paying. For that reason, we encourage wives and children to find part time employment or participate in various employment and training programs.

Additionally, cottage industry development should not be overlooked as a legitimate method of maintaining income and community cohesiveness. Though we are addressing the needs of individuals, we cannot forget that the very existence of many rural towns is threatened. The University of Nebraska estimates that half of the Nebraska towns with populations under 500 will not exist by the year 2000. It will not do any good for us to provide a temporary means of support for the farmers to continue farming if the towns subsequently blow away. More importantly, if all we do is treat the symptoms of the problem we see, then there is nothing preventing a recurrence of a similar situation at a later time.

Cottage industry development can be seen when a farm wife starts a business to supply the husbands and field workers of other farm wives with food while the other wives are working at off farm employment. It can be seen when members of a farm family market for

sale a particular recipe. It is a vital element in an overall strategy of rural revitalization and economic development of small communities which are in turn crucial to ensuring that future farmers will not have the exclusive dependence on agriculture they now have. Additionally, the farm machinery and labor cooperatives utilized so successfully in the past can contribute toward the efficiency and successfulness of modern farm ventures.

To successfully address the problems facing agriculture, it is imperative that the solutions be as broad based and as comprehensive as the problems. Anything less than a full frontal assault on the problem will result in failure, not only for the programs we implement but for the individuals they are designed to help. The state and the private sector must work together to provide training programs and employment opportunities which will ultimately address the needs of the individuals, their communities, and the economy. Equally important as designing a comprehensive solution to the problem, is designing a program which involves as many of the agencies, both public and private, directly or indirectly associated with the situation. In addressing the crisis, Governor Kerrey directed that all state agencies work together to develop a program and a method of delivery which met the needs of stressed farmers and ranchers. It was this cooperative effort which was later named "Agriculture-In-Transition".

Regardless of what agencies are involved in the preparation and delivery of services to the dislocated individuals, any problems or disputes surrounding turf must be ignored. The crisis which needs to be addressed is of such severity that minor disputes over what agency delivers what program serve only to disrupt and endanger the successful delivery of the entire program. Nebraska recognized that resources were limited and that many different agencies had programs or expertise which would enhance the overall effectiveness of the The Agriculture-In-Transition program. For example, Nebraska's program was structured so that the state Department of Agriculture could act an initial spokesperson for the program as well as provide technical assistance and advice on what programs were needed. The Department on Aging provided training programs using displaced farmers to provide home health care for elderly citizens, which in turn created job opportunities in isolated communities. The Department of Labor provided extensive, innovative, and rurally accessible job training, job search, and job exchange services. The Department of Economic Development provided entrepreneurial training for dislocated farmers and provided workshops for local communities on economic development strategies. The Nebraska Association of Community Colleges was also utilized to provide locations where as many of these programs could be offered in one place as possible. These "one stop shops" are referred to as Ag Action Centers.

The major funding source of the Agriculture-In-Transition program is a Title III discretionary grant from the Secretary of Labor, under the Job Training Partnership Act. Because Title III funds were originally made available for massive layoffs in labor intensive industries, such as automotive, steel, and shipping, it took a special eligibility determination from the federal government to allow the funds to be used for agricultural workers.

Initially, we found that many farmers are reluctant to be seen entering a local social service agency because they view it as a first admission of failure. As a result, many farmers would not even attempt to enter a program, no matter how innovative or helpful, if they had to be seen by members of their community in an office which had a negative stigma. This is why we chose to use community colleges as the location of our Ag Action Centers. Participants are free to walk in and talk with a counselor about any of their problems. At these Ag Action Centers, they have the opportunity to decide for themselves if they have a problem with their farm or ranch, and if so, whether they want or need outside help.

Financial evaluation programs are offered on an individualized basis so participants can discuss their situations with counselors and help arrive at a realistic assessment of where they are financially. Financial counseling programs including advice on Chapter 12 bankruptcy and alternative financing programs are made available as well. Legal assistance counseling and advice on supplemental, off farm income opportunities are also provided.

Secondly, the Agriculture-In-Transition program provides a variety of counseling and educational opportunities for participants. Recognizing that the face of rural America is changing and that future farming will be done much differently than it is now, farm and ranch management courses are offered to prepare participants for the more difficult economic farming which lies ahead.

Because many participant have never had a job off a farm or have been out of the job market for long periods of time, they often enter the program with low self esteem and the belief that most of their skills are nontransferrable. This problem with low self esteem is compounded by the feeling that they have failed in their farms and are consequently personal failures as well. They walk into the program actually believing they are "just a dumb farmer". We address this need by offering career exploration and assessment programs which help participants come to the realization that they do indeed have marketable skills.

Additionally, we offer classroom training for those individuals who choose to enter entirely different fields of employment. For these people we can pay for up to a year of classroom training and books in a community college setting. Included in this program is On The Job Training, where we will reimburse an employer for 50% of an employees wages during a training period to hire and train a dislocated farmer.

While job training programs help the agricultural workers to develop new skills, that only addresses half to the problem. Employers must be made aware of the availability of these individuals and must be encouraged to utilize them. Where possible, employers should be asked to adjust their employment or manufacturing schedules around the seasonal employment nature of the agriculture industry.

The intent of the program is to offer such a variety of services that an individualized plan can be made for every participant who enters the program. Because each participant has a different background and different problems, individualized programs are necessary to help each person. More importantly, the more individualized the program is, the more a farmer or rancher will believe that the program is actually designed to help him, and that there can be real benefits to participation. Through this process of individualizing, each person has the opportunity to work with program staff people to find solutions to his own problems; he recognizes that he has taken an active role in helping to solve his own problems, and that proves to be invaluable in restoring his self-esteem.

To be successful, a program must allow a large number of individuals to explore its offerings. For example, Nebraska's program had 2,010 individuals contact the Ag Action Centers. Of them, 53% or 1,066 became enrolled in financial management programs and educational workshops. Of these individuals 733 decided to leave farming and learn a new skill through job training programs.

The return on the investment thus far has been remarkable. Since the program began in October of 1985, 418 people have completed it, and we have placed 322 of them for a 77% success rate. The average wage they can expect to receive in Nebraska upon successful completion of the program is \$5.57. Each person placed near that wage generates approximately \$911 in state taxes and \$1508 in federal taxes for a combined total of \$2,419. In addition, that individual generates \$8,864 in retail sales annually. Equally as important, these people leave the program with a marketable job skill and realistic hopes for future employment. Contrast these statistics with the cost of traditional social service programs: AFDC at \$6,000 per family, Food Stamps at \$1,380, and Unemployment Insurance at \$1,560.

For the future, we must begin to examine where the agriculture problems begin in order to try to prevent their reoccurrence. However, utilizing innovative programs such as the one in Nebraska can help to alleviate the symptoms and can in fact go a long way toward preventing repetition. We need to identify and then take positive steps toward solving the problems we encounter in rural economies and communities. We must also recognize that small farms and communities are an integral and vital component of America, and that their preservation is critical to our ultimately productive survival.

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ENTREPRENEURSHIP AS A DEVELOPMENT STRATEGY FOR RURAL COMMUNITIES

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Rural communities and regions have been actively pursuing additions to their economic base to offset changes in agriculture and other natural resource exploitation activities for at least the past 25 years. Many have been successful and the impressive diversification of the economy of many rural areas gives testimony to the past effectiveness of that strategy. Relocation of manufacturing industries from metropolitan to rural regions contributed most to that diversification in the 1960's and 1970's. But recently prospects for further relocation of industries to rural areas have diminished and simultaneously an agricultural crisis has descended on the heartland of rural America. It is this convergence of events that contributed to choosing the title "After The Factories" for a recent publication of the Southern Growth Policies Board which examined changing employment patterns in the rural south.

As economic circumstances have eroded in many parts of rural America more farmers, rural residents, and communities have turned to other alternatives to provide family income. Giving up farming, either forced or as a matter of choice, and relocating continues as an option for many, but an even greater number have been seeking nearby off-farm employment or establishing their own enterprises in an effort to tide things over. Recent substantial growth in self-employment and new small scale enterprises in many parts of rural America reflects this response. In Missouri for example only 2 of 97 non-metropolitan counties experienced a decline in number of private sector business establishments from 1980 - 1984; 43 of the counties experienced a 15 percent or greater increase in the number of firms from 1980 - 1984--a period during which there was both a general recession and the agricultural crisis became more serious. In addition one can observe many new rural self-employment enterprises that are not included in such data but have recently emerged in response to rural economic change. Some have referred to these as the emergence of an "underground economy". Growth in the number of enterprises can probably be taken as an indication of economic necessity as much or more than as an indicator of significant rural development. We really don't yet know the extent to which these recently established enterprises will become permanent additions to rural community economies with some prospect for growth. But it is evident that creating small scale enterprises has been one way many rural residents have adapted to economic change.

The Odds: Firm Relocation vs. New Enterprise

Regardless of rural localities' degree of commitment to "industrial development" most face an up-hill battle at best. The economic development odds facing nonmetropolitan localities have recently been estimated by Candace Campbell and associates (1985). They write that: "Today of the 360,000 potential businesses to be chased, ten percent expand or relocate annually.

However, of these 36,000 expansions and relocations only five percent will relocate in another state. Aiming for these 1800 relocations are many of the 12,000 - 15,000 development and redevelopment councils, commissions and agencies." (1985:43) Conversely they cite a Wall Street Journal article contending that of the 17 million American small businesses about 1 million have both the inclination and capacity for substantial growth and significant job generation. They suggest that 1 million small firms with a capacity for growth present better odds than pursuing one of the 1800 relocations.

With the need for economic development and diminishing prospects for industrial relocation "entrepreneurialism" has been added to the numerous "isms" of economic development in recent years. This emphasis has no doubt been encouraged by Birch's widely publicized findings that much of the country's new employment is being generated by small firms (Sheridan, 1985). Subsequent research has demonstrated that those findings are somewhat misleading (Armington and Odle 1982; Miller, 1985) since much of the new growth in businesses classified as small, is largely owned and/or controlled by larger firms. Despite those findings, the creation of new, small enterprises remains an appropriate and promising part of an economic development strategy for many rural communities and regions. Small business can fill important local needs, can be more responsive to local influences, can adapt to local conditions, and may be less likely to migrate (Sheridan, 1985).

Although small businesses are more likely to "belong" to their community, and to cluster around less "cyclically sensitive industries" (Sheridan, 1985), there are some downsides. They tend to be concentrated in low wage industries and their risk of "failure" is presumed to be higher--although the late Albert Shapero contended that the failure rate of small businesses is inflated--in his judgment many of the failures are "repeat offenders." (Shapero, 1983). Failures and generally low wage rates attenuate the promise of small business for needed and substantial rural development. But weighed against those negatives are that small business development is within the resource capability of most rural communities, can provide an economic transition, and promise more certain, although possibly less spectacular, returns on local investment than the proverbial "smokestack chasing". Added to that many suggest that there are possibilities for more knowledge based and sustainable small business development, that combine both higher wages and growth potential, than has been achieved in rural areas (e.g., Deaton, 1986; Flora and Darling, 1986).

Entrepreneurship as Creativity - Sustainable Rural Development

There has been a tendency to equate entrepreneurship with anyone who runs a private business enterprise. However Shapero (1983) and Drucker (1986) both disagree with that notion of entrepreneurship and dismiss the nation's private sector as having exhibited relatively little entrepreneurship in recent years. Reich (1983) concurs, and refers to corporate America as having entered an era of "paper entrepreneurship". Shapero believed that entrepreneurial activity occurs when something new and creative has happened--whether in the private sector or public; applied to business enterprise or public services. It is in this context of the need for new and creative initiatives in rural America that we are utilizing the concept of entrepreneurship. While our focus is on rural economic development, there is also a great need for entrepreneurship (creativity) in rural education, health care, government, services, etc. In the context of the rural community, entrepreneurship in one sector can contribute to its emergence in other sectors. As Pulver observes "The more vibrant communities generally have higher levels of entrepreneurship... The more entrepreneurial community is characterized by resilience, initiative-taking, diversity and the ability to generate anew and experiment." (Pulver, 1985:15) As we shall emphasize later, a part of a rural development strategy is the assumption that an environment can be created which is conducive to the emergence of entrepreneurship.

While the following comments are oriented toward small scale enterprise generally, we will be paying particular attention to the potential for knowledge based and sustainable enterprise development. We use the term knowledge based rural development in contrast to the more fashionable but limited denotation "high-tech". By knowledge based rural development we refer to those activities which intentionally incorporate knowledge and technology in new, sustainable ventures. We contrast this with some of the recent rural job growth in low skill industries and services which require little, if any, knowledge or technical input. We follow Deaton (1986) in suggesting that there are 3 essential components for sustainable economic development - venture capital, technology transfer, and human capital development. Human capital development and technology transfer imply a stronger role for education, educational institutions and research. As stated by Sheridan, education (especially higher education) "can play a significant role in economic development, but the various approaches to economic development tend to ignore or understate that role." (Sheridan, 1985:24). Human capital development addressed to rural economic, social and service needs today would also surely incorporate identification, training and support of entrepreneurs.

Entrepreneurship and the USDA/Land Grant System

A very important linkage for knowledge based rural development is technology and technology transfer (Deaton, 1985).

To the extent that rural economic development becomes more knowledge based it incorporates an expanded role for the research and extension efforts of the USDA-land grant system--especially in terms of more effective linkages with rural development efforts. We have years of accumulated experience with knowledge and entrepreneurial based agriculture. Indeed application of knowledge to production agriculture and supplying the research and information needs of agricultural entrepreneurs has been the system's success story. There should be some transferability of those skills and experiences, although we have not yet devoted a great deal of attention to figuring out how. It is clear however that to do so must begin with (a) an understanding of knowledge based rural development and (b) a commitment to do something about it.

Although we have not yet fully developed the parallels I believe they are there. Entrepreneurship is not a whole new ballgame for the USDA/land grant system. Yet the agricultural research, education, and extension enterprise has been directed to serving the needs of entrepreneurs since its inception. One of many applications of this thought concerns vocational training. Broadly speaking, most non-agricultural vocational training programs have been oriented toward training future employees in some narrow skill. During the past few years as ideas about skill training have been changing, vocational educators have been directing more attention to the kinds of models appropriate for the training of generalists and entrepreneurs. Yet the vocational agriculture model--one that is quite different in methods of operation and one that begins with the premise that their graduates are going to be generalists and self-employed -- is our oldest federally supported vocational training program. Training farmers may no longer be a high priority but training rural entrepreneurs with a capability of applying knowledge to rural economic and service needs is, raising a question about broader vocational training application of the vocational agriculture model.

Our contention is that the research, education, and extension functions of the USDA-land grant system are experienced in supporting agricultural entrepreneurship and associated enterprises, and that this system could be adapted to a broader range of support of rural development initiatives.

Characteristics of Entrepreneurs and Their Support Needs

There is a different set of considerations in stimulating entrepreneurship and local expansions than in attracting industry from the outside. We have developed "rules of thumb" to guide investments and efforts to attract industry but are still in the process of learning what is needed for job creation and expansion. While we don't propose an alternative model we review below some of what has been learned in recent years about locating entrepreneurs and supporting small scale enterprise.

The Entrepreneurs

1. Location factors

An important finding from past research is that entrepreneurship occurs close to home (Brockhaus 1984). Few entrepreneurs make the decision to begin a new enterprise and then proceed through a rational decision process to choose an optimum location. They generally try their idea close to home. Our research on technical entrepreneurs in non-metropolitan college and university towns supports this (Buck, et. al. 1984). In effect then for most entrepreneurs the location decision is given. The implication for rural communities is clear--the best place to look for those who might establish a new enterprise is within the vicinity.

Brockhaus cites several reasons why this is true. He contends that entrepreneurs by staying close to home can have better information, be exposed to less risk, retain their job and start an enterprise on a part-time basis (a frequent pattern as a way of reducing start up costs), concentrate on their business instead of being preoccupied with becoming established in a new location, and have the benefit of a psychological cushion in the form of the contacts and social capital they have accumulated over the years, etc.

Other factors that influence location of small scale enterprise have also been undergoing reassessment in recent years. Many service and knowledge and information based enterprises are not as constrained by the need for raw materials and freight services as in other product industries. This reduced constraint enables environmental and quality of life factors to play a more prominent role in location decisions (Buck, et. al. 1984). The absence of raw material constraints in many new enterprises also enables a wider range of communities to become candidates for alternative forms of economic development.

2. Source of Entrepreneurs

In general nontechnical entrepreneurs tend to come from industry. It has also been found that companies with 500 or fewer employees have a spin-off rate 10 times higher than that of larger firms (Brockhaus, 1984). Explanations include the fact that smaller businesses provide more relevant experience for the prospective entrepreneur of a small start up firm. There is also evidence that entrepreneurs tend to be "pushed out" of their existing job by an absence of opportunity for promotion and financial reward. Smaller industries often provide fewer opportunities for upward mobility than larger firms.

Smaller communities in farm crisis states should also be aware of the entrepreneurial potential of farmers being forced out of farming. Farmers are experienced in operating their own businesses and with community support may find opportunities for new enterprise within the locality. Rural communities should also

be aware of the potential for new enterprise that exists among rural youth who have received vocational training. Since there has been little entrepreneurial emphasis in most vocational training programs the idea of applying their skill in their own venture may not occur to many promising vocational graduates. As we emphasize below however the prospects for success of such entrepreneurs is likely to depend on the extent of community support for their efforts.

3. The Role of Concentration

A part of the supporting environment for successful entrepreneurship is a concentration of related enterprises, especially when the product or service is not limited to local consumer demand. Rather than being competitive, a concentration of related enterprises can be complementary. Several businesses in related product lines can facilitate the local availability of necessary support services, marketing, suppliers, technical assistance, venture capital, etc. High technology enterprises provide a good example of the effect of concentration. Technology based firms tend to be located in clusters around the country. In our research (Buck, et. al., 1984) we found that a non-metropolitan college or university community is conducive to the emergence of technology based enterprises because of the concentration of technical skills and support services found in such communities.

We suggest therefore that rural localities as a part of their development strategy consider not just the creation of individual firms, but rather clusters of related firms whose combined presence can improve the prospects for success of each firm.

4. An Entrepreneur or a Team?

In the search for today's entrepreneur it is possible to lose sight of the fact that what the community is searching for is a viable enterprise--an economically creative enterprise with prospects for growth. Finding the person or persons to establish a firm is just the first step in the process. The goal is economic development and what it takes to achieve it.

There is a tendency to think of the entrepreneur in the singular but the need is for entrepreneurship which may more effectively involve a group of persons. Brockhaus reports research indicating that many successful firms are established by a team of persons with complementary abilities rather than an exceptional individual. He reports for example that: "In technology oriented firms we find that 60% of the formations are by teams--business in general is only 30%" (Brockhaus, 1984:16). The value of a team is that different members contribute different skills and resources necessary to the success of an enterprise.

For that reason Brockhaus points out that a community may be more likely to gain spin-offs from existing firms if those firms have a more complete set of key functions, e.g. engineering,

manufacturing, marketing, finance, etc. located with the firm than if it is just a manufacturing facility.

Community planners in identifying enterprises that might have potential for growth would do well to concern themselves with the range of skills that will be needed for success and determining how those skills can be provided for.

5. Motivation of Entrepreneurs

Research on entrepreneurs suggests some parallels with research on leadership--entrepreneurs, like leaders, are more easily recognized by what they do, than by what they are.

Entrepreneurs are often thought to be risk-takers, but evidence suggests that they are neither exceptionally conservative nor have a high propensity to take risks (Pulver, 1985). Similarly prospective entrepreneurs seem not to be limited to any particular age group - in a survey we completed of prospective technical entrepreneurs we found persons over age 50 at least as well represented among respondents as those who were younger (Myers and Hobbs, 1986).

In rural communities persons age 55 and over who have retired from one career to a rural locality (which has been a trend in recent years) may be among the more promising prospective entrepreneurs. In addition to their years of experience they are usually free of need for an immediate income and have more time to devote to establishing an enterprise. Such persons may be especially attractive prospects for becoming a part of an entrepreneurial team.

There is also evidence that a decision to start an enterprise often precedes having a definite product or a clear idea of what the enterprise might be (Brockhaus, 1984). This is closely linked with the finding that entrepreneurs are often pushed out of their existing employment or career because they perceive insufficient opportunities, they want to achieve a greater degree of control over their own future, or they have lost their job or present source of income. We noted at the outset a tendency for small business formations to increase during a recession or hard times in some sector such as agriculture. Necessity as much as opportunity can contribute to the formation of new enterprises.

Their Support Needs

Communities can create an environment which is conducive to identifying and supporting the efforts of entrepreneurs. To do so requires as much or more commitment to job and enterprise creation as some communities have invested in industrial development.

1. A Community Umbrella Organization

Flora and Darling emphasize that "...the creation of an umbrella organization, which usually involves the coming together of a variety of community groups, is the best basis for community development." (1986:210) Such a broad based organization can contribute to coordinating resources of the community including sectors such as farm organizations, schools, service clubs, etc. whose help has not often been enlisted in rural economic development efforts in the past. Especially important functions include tapping into new sources of seed and venture capital and bringing about a more direct and planned linkage between a community's education and training investments and their economic development efforts (Hobbs, 1986).

We suggest that creation of such a broad based community or area organization as a first step which can be instrumental in creating other features of a supporting environment.

2. Infrastructure

Many communities have made local infrastructure investments in their attempts to attract industry. Included have been investments in extension of sewer and water systems, industrial parks, roads and rail sidings, etc. While these have been effective for some communities they have not produced a return for many others. Choate for example reports that "EDA has found that less than 25% of its industrial park investments are being utilized. This represents a substantial diversion of limited public infrastructure investments to non-productive uses." (Choate, 1980:1020)

Focusing attention on knowledge based small scale enterprises invites consideration of the appropriateness of the kinds of investments made to attract industry and also of different kinds of supporting infrastructure (Hobbs, 1985). It may be for example that the reliability and quality of electrical and telephone service may be as important or more important for information based enterprises than the capacity and quality of surface transportation. We found in our research of technology based enterprises that the availability of overnight package service, dependability of electrical transmission, quality of phone lines, availability of technical personnel were all rate more highly as location considerations than industrial parks, sewer and water services, freight services, etc. (Buck, et. al., 1984)

A different form of infrastructure that is being emphasized more for its value in generating new enterprises is the incubator (Campbell, et. al., 1985; Green, 1984). The basic idea of an incubator is to provide space, contacts, technical assistance, and support services for potential entrepreneurs to enable them to further develop an idea or product, do market and feasibility analysis, etc.

3. Seed Money and Venture Capital

In 1984 a conference jointly sponsored by USDA was held at the University of Missouri-Rolla to address partnerships for rural technology based incubation. The conference attracted a wide range of participants from both public and private sectors. In responses to a questionnaire, conference participants listed seed money as being more important than venture capital to the establishment of new enterprises. One of the speakers emphasized that "federal government research contracts have always played a major role in providing seed money for technology based companies....The SBIR program is really a good program that can provide some of that seed money to get started." (Green, 1984)

Closer to home it is sometimes true that prospective businesses have more difficulty attracting a small amount of money to perfect an idea or get started on a small scale than attracting larger amounts of venture capital. One idea that has surfaced for locally providing small amounts of seed money is the creation of a local community development foundation. An OTA report emphasizes for example that where there is little local venture capital activity, the private sector can seek to establish a "presence" by creating an investments vehicle to pool local risk capital and encourage local entrepreneurs.

An umbrella organization, an incubator, or a community development foundation can also be instrumental in stimulating the availability of new enterprise loans from existing lending institutions. As suggested by Pulver; "Lively communities have lively financial people (both public and private). Lively financial institutions have an orientation toward success rather than an interest in hedging against failure." (Pulver, 1985:17)

Depending on venture capital requirements community sources may or may not prove to be sufficient. However local sources are often overlooked for new enterprises although family and other local sources have been increasingly utilized in farm finance in recent years. Localities may not have sufficient resources but often that determination is not made. In a recent planning effort we called Rural Missouri 1995 one task force member remarked: "The venture capital is out there - we just haven't given local people many reasons to invest in their locality."

Beyond the community Deaton emphasizes a new and different economic development role for state governments. He suggests a need to create a venture capital capability that will target specific regions and sectors of the state's economy. (Deaton, 1986:190) He continues to describe the role played by the Rural Virginia Development Foundation in targeting regions and enterprises for venture capital support.

4. Linkage With Sources of Technology, Information, and Technical Assistance

Sustainable, knowledge based rural development involves the application of knowledge and technology to new enterprise. Since few rural communities are likely to have much in the way of local research and development expertise this typically involves establishing linkages with outside agencies and organizations having those support capabilities. Especially important are those public agencies such as land grant universities and extension services that have a responsibility to provide information and technical assistance to communities.

This is a relatively new dimension of rural development and as we noted above land grant universities have not yet generally addressed the problem of how to provide on-going technical assistance and information support to the rural development efforts of local leaders and communities. Concurrently rural communities have not generally been seeking such support, concentrating their rural development efforts instead on relocation of existing firms who have already developed their product or products.

Among the kinds of knowledge support needed are: (1) on-going planning and economic assessment information for community leaders (Flora and Darling, 1986); (2) refined and targeted economic analyses of sectors and enterprises having the greatest potential for growth in various regions (Deaton, 1986); (3) technical assistance to individual entrepreneurs/enterprises to further refine or develop a product(s); (4) assistance in providing and/or developing education and training programs to support new forms of enterprise, etc. (Hobbs, 1986).

As we emphasized above although land grant universities are not exclusive in their potential to support sustainable and knowledge based rural development they have much of an appropriate organizational structure and technical capacity to do so. The effectiveness of small scale enterprise as a component of rural development will likely depend in general on communities establishing linkages with outside sources of technical assistance and more specifically on land grant universities making a commitment to a form of rural development they have a potential of serving more effectively.

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FIRST REPORT OF THE JOINT NUTRITION MONITORING EVALUATION COMMITTEE

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Nutrition Monitoring in the United States--A Progress Report from the Joint Nutrition Monitoring Evaluation Committee is the first report to bring together information from the National Nutrition Monitoring System to provide a comprehensive review of the nutritional status of the U.S. population. The report was submitted to Congress by the Departments of Agriculture (USDA) and of Health and Human Services (DHHS) on July 15, 1986.

The committee which produced this report, the Joint Nutrition Monitoring Evaluation Committee (JNMEC), was established as a Federal advisory committee in October of 1983. Four experts in nutrition and related fields were appointed to the Committee by the Assistant Secretary for Food and Consumer Services, USDA and the Assistant Secretary for Health, DHHS, who jointly chaired the Committee. The four appointed members were Dr. Helen Guthrie, Dr. Jean-Pierre Habicht, Dr. Stanley Johnson, and Dr. Theodore Van Itallie. Staff support to the Committee was provided by both Departments.

The report draws on information from the major components of the National Nutrition Monitoring System. This monitoring system is a complex of interconnected research and activities in five areas--health status measurements, food consumption measurements, food composition measurements, assessments of dietary knowledge and attitudes, and food supply determinations.

Health status and food consumption measurements were the focus of the report. Measures of health status came primarily from DHHS's National Health and Nutrition Examination Survey, 1976-80. Measures of food consumption came primarily from USDA's Nationwide Food Consumption Survey, 1977-78. Data on food composition from USDA's Nutrient Data Bank is an integral part of all of the dietary assessments. The report also includes some information from the Food and Drug Administration's assessments of dietary knowledge and attitudes. Trends from USDA's historical series on the levels of various food components in the U.S. food supply since the beginning of the century were included.

The report has several significant features. Most importantly, it demonstrates for the first time how the component parts of the National Nutrition Monitoring System can be used together to assess the nutritional status of the American population. The report may be considered a primer in nutrition monitoring because it describes in considerable detail the methodologies for the major components of the monitoring system through the 1970's. The chapter on nutritional status has a separate section for each of 23 food components. In

each of these sections, the available dietary and health data are presented together. Information on diet includes data on food and nutrients at three levels--the U.S. food supply, household diets, and individual intakes. The health data included in these sections are those that can be directly tied to the food component, such as serum albumin levels for dietary protein and serum vitamin C levels for dietary vitamin C. Health conditions and behaviors that may be related to several aspects of diet as well as to other factors are covered in a separate chapter. Almost all of the data are illustrated in bar charts and line graphs with a detailed appendix of tables.

A second significant feature of the report is the categorization of food components by the level of monitoring priority they should be accorded. Priority status was accorded to food components related to health problems that can be affected by public health policy.

In addition, food components are categorized in the report as to the completeness of related information. The assessment of completeness was based on the quantity and quality of dietary and health data as well as the availability and applicability of criteria for determining the significance of these data.

In the report, discussion of the determinants of nutritional status is initiated by devoting a chapter to the factors influencing dietary status. The Committee's intent was to set the stage for future reports which would focus on this topic. Recommendations for improving the monitoring system are also an important part of the report.

Findings--Completeness of Data

The ability of the Committee to assess the nutritional status of the U.S. population from information obtained through Federal surveys was dependent on the completeness of that information. Tables are included in the report in which the sources of dietary and health data and the assessment criteria for each food component are identified. The Committee assessed the completeness of available data for food components as follows:

- o Food components for which data were the most complete: Food energy, protein, vitamin A, vitamin C, and iron.
- o Food components for which data were less complete: Thiamin, riboflavin, niacin, vitamin B₆, vitamin B₁₂, calcium, and phosphorus.
- o Food components for which data were the least complete: Fat, fatty acids, cholesterol, carbohydrate, added caloric sweeteners, fiber, folacin, magnesium, sodium, and zinc.

Other food components are not included in this report because data on them are even more limited. Fluoride and alcohol were exceptions. They were included because of their public health significance even though information on them included in this report is very limited.

Findings--Nutritional Status

The Committee concluded on the basis of the information available that in the United States, the food supply is safe and adequate, indeed, abundant. Although some Americans may not have sufficient food, clinically significant nutritional deficiencies for which the diet is responsible are relatively rare. Food choices based on variety, balance, and moderation, as recommended in the Dietary Guidelines for Americans (USDA, HG-232), jointly released by USDA and DHHS in 1985, can provide a diet adequate to meet nutritional needs.

Nutrition-related health problems affected by public health policy are addressed in the report. Food components were placed in one of three categories of monitoring status priority based on their relationship to nutritional status:

- 1) Food components warranting public health monitoring priority status;
- 2) Food components warranting continued public health monitoring consideration; and
- 3) Food components requiring further investigation.

The Committee recommends that while the entire dietary spectrum requires continued monitoring, special emphasis should be given to food components in the first category because of their greater potential for related public health problems. For food components in the third category, emphasis should be placed on the development of assessment methods and standards to permit more meaningful monitoring.

Food Components Warranting Monitoring Priority Status

Food components in the monitoring priority status category include, because of relatively high consumption, food energy, total fat, saturated fatty acids, cholesterol, sodium and alcohol; and, because of relatively low consumption, vitamin C, calcium, iron, and fluoride. Although only limited information on alcohol and fluoride was reviewed for this report, they are included in this category because of the importance of related health problems. In addition to social and public safety problems, excessive alcohol intake is related to cirrhosis of the liver and certain cancers, especially esophageal. Fluoride is a major prevention factor in dental caries. Fluoride may occur naturally in water or be added to municipal water supplies. However, some Americans may not ingest sufficient fluoride from food and water to benefit from this preventive effect.

Food energy intake in excess of energy needs is considered a major problem in the United States. Twenty-eight percent of the population ages 25-74 years are overweight. The prevalence of overweight has remained the same in surveys conducted in the early 1960's, and in the early and late 1970's. Overweight was most prevalent among women, especially black women and women below the poverty level. Overweight is a concern because it greatly increases the risk of having hypertension and non-insulin dependent diabetes, particularly among adults under 45 years of age. Obesity is also associated with increased levels of blood fats

(triglycerides) and cholesterol, heart disease, strokes, certain cancers, and many other types of ill health.

The relationship of body weight to the balance between food energy intake and expenditure is well recognized. However, food intakes reported in surveys indicate food energy levels below those recommended as "average" by the National Academy of Sciences (1980). Several possible explanations might be given for the apparent lack of agreement between the dietary and health data: (1) recommended "average" energy intakes may be higher than actual "average" energy needs; (2) individuals may not fully report their intake, especially of high-calorie, low-nutrient foods and beverages; (3) excessive food energy intakes may have occurred at some time prior to the survey periods, and current intakes may reflect attempts to lose weight; and (4) the aggregation of data for individuals surveyed may mask the relationship between food intake and body weight for a single individual. The Committee concluded that the available monitoring data suggest that, overall, Americans maintain very low levels of physical activity. Because obesity adversely affects health, all aspects of this issue, including measurements of energy intake and expenditure and criteria for assessment, warrant attention in the future.

Total fat, saturated fatty acids, cholesterol, and sodium are considered monitoring priorities because high intakes have been linked to cardiovascular diseases and intakes are higher than many authorities recommend. Associated cardiovascular diseases include coronary heart disease, arteriosclerosis, hypertension, and cerebrovascular disease (which may lead to stroke). The interrelationships among these diseases are complex, and factors which affect the incidence and prevalence of one disease may also affect the incidence and prevalence of others. Elevated serum cholesterol levels, elevated blood pressure, cigarette smoking, and obesity have been identified from epidemiological studies as major controllable risk factors for coronary heart disease.

Populations with diets relatively high in fat, especially saturated fatty acids, and cholesterol tend to have high serum cholesterol levels. Dietary data indicate that the U.S. population as a whole has relatively high intakes of all of these food components. In 1977-78, few individuals, regardless of sex, age, economic status, or race, reported diets which provided less than 30 or even 35 percent of calories from fat, as recommended by some authoritative groups. Data on the fatty acid composition of individual intakes were not available in 1977-78, but information on total per capita quantities of food available at the wholesale or retail level of distribution indicated that the level of polyunsaturated fatty acids in the U.S. food supply was lower than some recommendations and that the levels of monounsaturated and saturated fatty acids were higher. Diets containing roughly equal proportions of these fatty acids would be more in line with recommendations. Estimates of the cholesterol intakes of individuals averaged higher than the upper limits recommended by some authoritative groups.

High blood pressure is a major risk factor for coronary heart disease. In populations with high sodium intakes, high blood pressure is common. In the United States, about one in four adults has elevated blood pressure, although certain groups, such as black individuals, have a higher prevalence. If people

with high blood pressure severely restrict their sodium intakes, their blood pressures will usually fall, although not always to normal levels without concurrent use of drug therapy. Even though estimates of the dietary intake of sodium by the U.S. population did not include all sources of sodium, the intakes of most individuals averaged close to or above the upper limit of the suggested safe and adequate range of intake (National Academy of Sciences, 1980).

The prevention and management of cardiovascular diseases have improved with increased emphasis on diet, exercise, better medical services, greater availability of coronary care units, advanced surgical and medical treatment of coronary heart disease, and improved control of blood pressure. The Dietary Guidelines for Americans (USDA and DHHS, 1980 and 1985) recommend that Americans maintain desirable weight and avoid too much fat, saturated fat, cholesterol, and sodium.

Vitamin C intake is classified as a monitoring priority because of possible inadequacies among certain segments of the population. Low serum vitamin C levels occurred in only about 3 percent of the population. However, the prevalence of low serum levels was greater among those over 12 years of age who had low intakes of vitamin C from diet and supplements, smoked cigarettes, and/or had low incomes.

Dietary intakes of vitamin C averaged above Recommended Dietary Allowances (RDA), but roughly 40 percent of the population did not meet their RDA. Low intakes of vitamin C, even for a short time, are of concern because the body does not store large amounts of this vitamin.

In general, intakes were lower for females than for males. Other factors associated with serum vitamin C levels may help to explain why males have higher prevalences of low serum vitamin C levels. For example, cigarette smoking is associated with low serum levels, and more males than females smoke cigarettes. In addition, the use of vitamin supplements is associated with higher serum vitamin C levels, and more females than males use supplements.

Another finding consistent with the health data is that economic status appears to be positively correlated with dietary levels of vitamin C; that is, individuals above the poverty level had higher intakes than those below had.

The relative importance of factors associated with vitamin C status and their interrelationships require further study. Possible benefits from high intakes of vitamin C and harmful effects from excessive intakes, particularly from megadoses of supplements, were not monitored in the population but are also reasons for priority monitoring.

Calcium has monitoring priority status because of low dietary intakes, especially among women, and the possible association of low intakes with osteoporosis in post-menopausal white women. Precise estimates of the prevalence of osteoporosis, which is characterized by decreased bone mass and increased susceptibility to fractures, are lacking, but 15-20 million Americans are estimated to be affected by this disease.

Dietary intakes of calcium from food averaged below the RDA (87 percent) for the population as a whole, with 68 percent of the population not meeting the RDA. Intakes for females were especially low. Only about one of five adult women reported diets that provided the RDA for calcium, and intakes for teenage girls were almost as low. Dietary calcium levels also were notably lower for the black population than for the white population. Dietary calcium levels appear to be positively associated with economic status, but race may be a more important factor.

The relationship of dietary calcium to osteoporosis is not fully understood. Several factors have been associated with the development of this disease, such as age, sex, race, menopausal status, use of estrogen therapy, and the amount of weight-bearing exercise. These factors seem to affect either the total bone mass attained or the rate of decline in bone mass. Although bone mass decreases with age in all people, women are at higher risk than men because they have less bone mass initially and their rate of bone mass decline is accelerated in the years following menopause. The prevalence of bone fractures is highest among postmenopausal women. Black people have denser skeletons than do white people. This may partly explain the lower incidence of bone fractures among elderly black people despite generally lower calcium intakes.

Iron warrants monitoring priority status because of impaired iron status among young children and females of childbearing age, especially among those who are poor or black, and because of low dietary intakes of iron. Prevalences of abnormal clinical and biochemical indicators of iron status were high enough to indicate concern for these groups. Less than one-half of the population surveyed in 1977-78 reported diets that provided their RDA for iron.

The highest prevalence of impaired iron status (20.6 percent) was observed among poor children 1-2 years of age. Diets reported for 96 percent of the children in this age group did not provide their RDA for iron.

Among people 15-64 years of age, females had a higher prevalence of impaired iron status than males had. The dietary data corroborate this finding. About 80 percent of females 19-64 years of age, but only about 10 percent of males in this age group, reported diets that did not provide their RDA for iron.

The black population had slightly higher prevalences of abnormal clinical and biochemical values for iron than the white population had. Dietary intakes of iron were lower for black males than for white males, but were uniformly low among females. In general, dietary levels of iron were positively associated with economic status.

Food Components Warranting Continued Monitoring

The second monitoring status category includes food components for which there is currently no evidence to warrant public health concern. However, these food components should continue to be monitored so that any trends in the use of food or in changing lifestyles that might lead to a problem can be identified. They include protein, vitamin A, thiamin, riboflavin, niacin, total carbohydrate, vitamin B₁₂, and phosphorus.

All of the food components included in this category except carbohydrate have established RDA. Mean intakes of these food components in diets reported by individuals in 1977-78 averaged above the 1980 RDA for all groups regardless of age, sex, race, or poverty status. This favorable picture of individual dietary intakes was corroborated by information on household food use in 1977-78 and by information from the U.S. food supply series for 1909-82.

Widespread deficiencies of protein, vitamin A, thiamin, riboflavin, and niacin still occur in various parts of the world today, and deficiencies, particularly of protein and niacin, have occurred in the United States in the past. However, for the majority of the American public, deficiencies of these nutrients are unlikely today. This does not preclude the possibility of deficiencies occurring among individuals or segments of the population, but these isolated problems cannot be solved by changes in public health policy related to nutrition. No public health problems related to inadequate intakes of carbohydrate, vitamin B₁₂, or phosphorus have been reported in the past in the United States or elsewhere in the world. Carbohydrate is of interest primarily as a source of energy in diets.

Food Components Requiring Further Investigation

Food components were classified as requiring further investigation if (1) information from dietary and health surveys was insufficient to permit a judgment about public health significance; or (2) intakes deviated from recommended levels for many in the population, but related health problems were not found or methods of identifying health problems were not available; or (3) despite theoretical reasons for believing that the food components might have public health significance, intakes were in an acceptable range and related health problems could not be identified. The food components in this category are added caloric sweeteners, fiber, vitamin B₆, folacin, magnesium, and zinc.

The added caloric sweetener content of the diet is an important factor in the development of dental caries, especially if the sugar is in a form that adheres to the tooth surface. Foods high in added caloric sweeteners provide simple carbohydrate, a source of energy, but are generally not high in nutrients. Nutritionists usually recommend that when carbohydrate intake is increased, the increment should be in the form of complex carbohydrate (starch) rather than simple carbohydrate. More research is needed to determine whether any particular ratio of complex to simple carbohydrate in the diet has a clear health advantage.

The importance of fiber in the diet has been stressed by several authoritative groups, but food composition data for total fiber and its component substances are limited, and standards for assessment that are generally agreed on are not available. This lack of information about fiber suggests the need for continuing research on the subject.

Dietary surveys indicate relatively low intakes of vitamin B₆, and data on the nutrient content of the U.S. food supply indicate relatively low levels of folacin and zinc available for consumption per capita. However, only scanty health survey data relate low intakes to health problems in the population. Although dietary data show that a significant fraction of the population had

intakes of magnesium below recommended levels, health survey data fail to show related health problems. More information is needed about the dietary levels and public health significance of these nutrients, and research is needed to develop better measures of nutritional status.

Recommendations

In the discharge of its second goal to assess the National Nutrition Monitoring System, the Committee made 14 recommendations for improvements in the system. These recommendations were categorized into four broad areas: Improved information exchange between data users and gatherers, increased use of data collected under the National Nutrition Monitoring System, improved methods and techniques for gathering information for assessing nutritional status, and increased resources for the National Nutrition Monitoring System.

Authors Comments

In the introduction to the report, the Committee stated that the National Nutrition Monitoring System, operated by the USDA and DHHS, is a unique Federal resource--one in which Americans can take pride. We want to keep these statements true and will continue to seek and implement ways of providing more and better information on the dietary status of the U.S. population.

Copies of the report, Nutrition Monitoring in the United States--A Progress Report from the Joint Nutrition Monitoring Evaluation Committee, are available from the Superintendent of Documents, U.S. Government Printing Office, Washington, D.C. 20402. (Price: \$18; Stock No. 017-022-00957-9)

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USDA'S CONTINUING SURVEY LOOKS AT DIETS IN 1985 AND 1986

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The Continuing Survey of Food Intakes by Individuals was started in 1985. It provides data on dietary change between USDA's larger Nationwide Food Consumption Surveys (NFCS), which we conduct every 10 years. The concern was that surveys which are conducted every 10 years may not be adequate to monitor the rapidly changing diets of Americans. Indeed, we found that diets reported in the Continuing Surveys of 1985 and 1986 differ in many respects from those reported in 1977-78, when the last large survey was conducted.

I will present some highlights from the first three reports of the 1985 Continuing Survey. The first report describes the food and nutrient content of 1-day diets of women 19 to 50 years of age and their 1 to 5-year-old children from a national sample of households at all incomes. The next describes diets of women and children of the same ages from a national sample of low-income households. The third reports diets of men 19 to 50 years of age from a national sample of households at all incomes. I will also draw from preliminary and unpublished results on the nutrient intakes by women from the all incomes sample for 6 days spread over 1985 and by women from another sample in spring 1986. The nutrient of diets reported will be discussed in relation to the Recommended Dietary Allowances of the National Academy of Sciences, the Dietary Guidelines for Americans published by the U.S. Departments of Agriculture and of Health and Human Services, and by selected recommendations by other groups.

I'll focus on results. Detailed information on sampling techniques and survey methods are available in published reports for sale from the Government Printing Office and on data tapes for sale from the National Technical Information Service.

In both the Continuing Survey and NFCS, professional interviewers, trained especially for this survey, obtained information about 1-day diets of women and young children from women respondents and of men from the men themselves. Interviewers collected the following information: a description of each food and beverage eaten on the day before the interview, the quantity eaten, the source of the food (whether from home food supplies or obtained and eaten away from home), and the time and the name of the eating occasion (breakfast, lunch, dinner, supper, or snack).

The 1985 and 1986 surveys included some questions not asked in the 1977-78 survey. For example, in 1985 and 1986, we asked about the use of fat and salt in preparing food. Also in 1985, interviewers were trained especially to probe for whether or not the respondent ate the fat on meat or the skin on chicken. These changes, we believe, improve the quality of data--especially on fat, fatty acids, and cholesterol in diets--because the better descriptions of foods eaten allow us to assign more appropriate nutritive values. However, some of the change you will see in diets between 1977 and 1985 may be due in part to the improved data collection procedures and not necessarily to actual dietary changes. The first survey report provides details on the differences in survey procedures between 1985 and 1977.

As in 1977, each household in 1985 provided information about certain factors that might affect food consumption. Two of these factors that I will discuss today are participation in the Food Stamp Program and household income. Some comparisons will be shown for women at three levels of income: 130 percent or less of the Federal poverty threshold, 131 to 300 percent of the threshold, and over 300 percent.

Over 1,500 women 19 to 50 years of age reported 1-day diets in spring 1985 and another 1,500 in spring 1986. Average intakes were similar in the two years with total energy levels between 1,600 and 1,700 calories per day. On average, this is about what the women said they ate per day:

- o 11 ounces--or about 3 servings--of vegetables, fruits, and juices.
- o 3-1/2 to 4 slices of bread or an equivalent weight in other baked goods.
- o 1/3 ounce of ready-to-eat cereal, or about 2 servings per week.
- o 3/4 cup of cooked cereals, pasta, and grain mixtures.
- o Over 1 cup of milk as beverage or in dairy products--about 2/3 cup of this was consumed as beverage.
- o 3-1/4 ounces of meat, poultry, and fish reported separately. This excludes the weight of bone and fat not eaten.
- o 3 ounces of mixtures with meat, poultry and fish as the main ingredient.
- o 32 ounces of beverages, excluding water--about one-third of these beverages were soft drinks.

Smaller amounts of other foods were reported to be eaten per day:

- o One-third egg per day (or about 2 per week).
- o about 2 tablespoons of legumes, nuts, and seeds.
- o 1 tablespoon of fats and oils.
- o 1-1/2 tablespoons of sugars and sweets.

Although women's diets differed little between 1985 and 1986, they differed considerably between 1977 and 1985. Compared with 8 years earlier, women in 1985 reported eating 60 percent more skim and lowfat milk; 53 percent more carbonated soft drinks; 35 percent more mixtures that are mainly meat, poultry, and fish; and 29 percent more grain products. They reported consuming 35 percent less whole milk, 34 percent less meat, and 28 percent less egg. Generally, the women from the higher income households were leaders in these food consumption changes.

For decades earlier surveys showed that consumption of meat increased as income increased. People who could afford it bought meat and more of it. This pattern appeared when women's intakes in 1977 (solid bars) were assessed at the three income levels. But in 1985 (striped bars), meat intakes decreased as income increased. Although meat intakes were lower in 1985 than in 1977 for all three income groups, the decline for the high-income group is most pronounced. "Meat" as used here refers to cooked red meat and processed meat reported separately in the survey. It does not include meat eaten as a part of mixtures. Consumption of such mixtures increased between 1977 and 1985.

Lowfat and skim milk intakes were higher in 1985 than in 1977 for all three income groups, but the higher income women were leaders in the move to lowfat milk. In 1985, low-income women consumed only about one-third of their fluid milk as lowfat or skim; while the higher income groups had one-half to two-thirds as lowfat or skim.

The use of all carbonated soft drinks increased at each of three income levels between 1977 and 1985. For low-calorie types, the increase is greatest at higher income levels. But regular soft drinks remain the favorite at all incomes.

Eating patterns of women, children, and men changed between 1977 and 1985 toward more snacks and more eating away from home. For example, 76 percent of the women had eating occasions they called "snacks" on the day reported in 1985--up from 60 percent in 1977. Children's snacking was also up over the period, from 62 to 83 percent reporting snacks. In 1985, 57 percent of women obtained and ate some food away from home on the day surveyed--up from 45 percent in 1977. Young children also ate out more in 1985, also.

The survey in 1985 showed a considerable increase in the use of vitamin and mineral supplements since 1977. In 1985, 58 percent of the women reported using some supplement regularly or once every so often--up from 39 percent in 1977. From these numbers, it appears that more women in 1985 than in 1977 were concerned that the variety of foods they ate--and that of their children ate--was not providing enough nutrients.

To the contrary, intakes (from food and beverages only) in 1985 for both women and children were as high or higher than in 1977 for food energy, protein, and all vitamins and minerals studied. Of the nutrients below the RDA, calcium showed the greatest gain in intakes by women between 1977 and 1985--from 69 to 78 percent of RDA. Gains were apparent for women with high incomes, but not for those with low incomes, primarily because high-income women drank more milk in 1985 than in 1977, while low-income women did not.

Women's intakes of folacin, vitamin B6, zinc, iron, magnesium, and calcium in 1985 averaged 51 to 78 percent of the RDA's. Intakes that fail to meet the RDA are not necessarily inadequate, because the RDA, to be safe, are set above the nutrient requirements of most people. However, the risk of having inadequate intakes is greater for groups of people whose mean intakes are well below the RDA.

Regardless of income, intakes were below the RDA for these six nutrients--folacin, vitamin B-6, zinc, iron, magnesium, and calcium. To me, this indicates that guidance for all Americans should continue to stress the importance of a varied diet with special emphasis on good sources of these nutrients. Intakes increased a little with income for folacin, vitamin B₆, magnesium, and calcium, but not for zinc and iron. The lack of increase for zinc and iron reflects, in part, the lower meat intakes by high income than by low-income women in 1985.

In the special low-income survey, only households with incomes below 130 percent of the Federal poverty level were visited. Over 900 women from households receiving food stamps and 1,200 women from non-participating households reported. I want to make only two points about them. First, the food stamp households had much lower incomes than non-participating households; median incomes were 56 and 113 percent of the poverty level, respectively. Second, despite their lower incomes, the women and children in the food stamp households had mean nutrient levels that were as high or higher than those in non-food stamp households.

Now for men of all incomes. They had mean intakes of food energy and of vitamins and minerals that were higher, compared to RDA levels, than were intakes by women. Men fared better because they ate more food. Also, their RDA for most vitamins and minerals are about the same as RDA for women. For iron, men's RDA are even lower.

The percentage of calories from fat was 37 percent in women's diets and 36 percent in men's. This is above the 30 to 35 percent level that some authorities suggest, but it is not as high as the 40 percent frequently quoted from our earlier surveys. Saturated fatty acids accounted for 13 percent of calories, and polyunsaturated fatty acids contributed 7 percent of calories in both women's and men's diets in 1985. Men had higher levels of cholesterol than women--440 mg per day compared to women's 300 mg. This is partly because men ate more food (2,560 versus 1,660 calories worth per day). When expressed in relation to calories the difference disappears--180 and 190 mg per 1,000 calories. (These levels are well above the 100 mg per 1,000 calorie goal suggested recently by the American Heart Association.)

The survey results shown thus far are averages. Some diets have considerably more fat and cholesterol and others have less. We favor presenting the data as averages when discussing single day diets, rather than as distributions because a diet on a single day often is not typical. However, we have used the average intake for the 6 days spread over 1985 to take a first look at the proportions of women who achieved specified fat and cholesterol levels. These averages for the 719 women who reported all 6 days are tentative, but they indicate how many women might meet the goals recommended by some groups.

Let's consider total fat first. Of the women reporting 6 days of food intake, only 14 percent ate fat furnishing the less than 30 percent of calories suggested by some authorities such as the National Cancer Institute (NCI) and the American Heart Association (AHA). The mean levels of calcium, iron, and zinc in these lower fat diets--66, 52, and 47 percent of RDA respectively--were below levels for all women--78, 61, and 60 percent.

Only 11 percent of the women reported 6-day diets with saturated fat below the 10 percent of calories that the AHA suggests. These women also had mean intakes of iron and zinc of about 50 percent of RDA. From these tentative findings, it appears that women need food selection guidance to help them to improve nutrient levels while controlling fat in their diets. Studies are under way to illustrate dietary changes that might be required to meet various goals suggested.

The 300 mg or less of cholesterol suggested by AHA in 1978 was achieved in 63 percent of the women's 6-day diets. However, the more recent recommendation of less than 100 mg cholesterol per 1,000 calories was achieved by only 8 percent of the women. Mean iron and zinc intakes in these low cholesterol diets were about 50 percent of RDA and below.

Total carbohydrate--some of it from starch and some from sugars--provided 46 and 45 percent of calories in women's and men's 1-day diets in 1985--up from 1977. We have not measured starch and sugars separately, but we know that both have increased because the use of certain foods that contain them, such as grain products and soft drinks, increased significantly.

Although the Dietary Guidelines suggest some increase in dietary fiber for Americans, knowledge is incomplete about dietary fiber in foods, the role of dietary fiber in body functions, and the optimum amounts to consume. The 1985 survey provided the first national estimates of dietary fiber intakes, and they are considered to be tentative. Intakes were estimated at about 12 grams per day for women and 18 grams for men. On a calorie basis they were about the same--7 grams per 1,000 calories.

In 1985, as in 1977, snacks made important nutritional contributions to diets. In 1985, they provided 16 percent of the total intake of energy for women. Disproportionately more carbohydrate (19 percent) and less protein and fat (9 and 13 percent) came from snacks. That is, snacks contain more carbohydrate foods than do other eating occasions. Women's snacks contributed 10 to 15 percent of their day's vitamins and minerals.

The food eaten away from home by women accounted for 22 percent of their food energy intake in 1977 and 28 percent in 1985. In each year, proportions of food energy from food away were similar to proportions of macronutrients, vitamins, and minerals. This indicates that food away from home, on a nutrient-to-calorie basis, is similar to food from home food supplies. The idea diets are adversely affected by eating away from home are not substantiated by these results.

In summary, here's what the surveys tell us about what Americans are eating in relation to the Dietary Guidelines:

Eat a variety of foods. The foods selected in 1985, especially by women, did not provide recommended amounts of several nutrients. Although diets were no worse than in 1977, little improvement was noted for nutrients studied with the exception of calcium.

Avoid too much fat, saturated fat, and cholesterol. Fat in women's diets provided 37 percent of calories with similar levels for children and men--down

from 1977. Just over one-third of the fat calories (13 percent of total calories) were from saturated fat. Cholesterol intakes averaged about 300 mg per day for women and 440 mg per day for men. (Few women had 6-day intakes of fat and cholesterol over the year in 1985 that achieved the goals suggested in 1986 by the AHA.)

Eat foods with adequate starch and fiber. Women's intakes of grain products were up almost one-third from 1977. Carbohydrate, from both starch and sugars, provided 46 percent of calories--up from 1977. Dietary fiber is estimated at about 12 grams a day for women and 18 grams a day for men.

Avoid too much sugar. Intakes were up from 1977 for sugar-containing foods, especially for soft drinks.

Avoid too much sodium. Mean intakes, not including salt added at the table, were in the range suggested by the Food and Nutrition Board as safe and adequate for women, but above it for men. The women's intake also might exceed the safe level if we could have included salt added at the table in the estimates. (Women's and men's mean intakes, even without salt at the table, are 50 percent above the 1,000 mg of sodium per 1,000 calories recently suggested by the AHA. No women surveyed had 6-day sodium intakes that were this low.)

Generally, food consumption behavior is changing faster than ever since diets were first monitored through national surveys in the mid-1930's. We are funding eight analytical studies of the Continuing Survey data to determine the factors that contribute to these changes. But from these descriptive results, the concern about nutrition appears to be an important one.

USDA has fostered interest in food and fitness for decades. We want the interest and the actions Americans take to be based on research-derived guidance for healthy people--such as the Dietary Guidelines for Americans published jointly by the U.S. Departments of Agriculture and of Health and Human Services. These directional and non-quantitative Guidelines, their importance to health, and some tips on how to follow them are presented in the bulletin, "Nutrition and Your Health: Dietary Guidelines for Americans" available free from the Consumer Information Center, Pueblo, Colorado 81009.

In addition to the Guidelines bulletin, 14 small bulletins (we call them "minibulletins") are being developed by USDA to help Americans put the guidelines into practice. These bulletins, entitled "Dietary Guidelines and Your Diet," provide basic information useful to help select, prepare, and combine foods into diets that conform to the Guidelines. The first seven--one about each of the seven guidelines--are now available as a set from the Government Printing Office and the Consumer Information Center. The next seven bulletins will focus on using the Guidelines in different food-related activities--food shopping, meal-planning, food preparation, eating out, making bag lunches, making quick meals, and selecting snacks.

We hope you will watch for these bulletins and for upcoming reports from the Continuing Survey.

ANNUAL AGRICULTURAL OUTLOOK CONFERENCE

United States Department of Agriculture
Washington, D.C.



DIETS OF THE ELDERLY

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Introduction

The increasing proportion of our population surviving to older ages and the variety of chronic diseases associated with the elderly have brought current attention to the nutritional status of this group. There are many dimensions to the nutrition-aging problem. Physical, behavioral, and socioeconomic constraints may limit food habits and practices. The elderly utilize a variety of medications; some of these alter appetite and nutrient metabolism. This group may be especially vulnerable to beneficial claims for nutrient supplements - including levels of intake well beyond the RDA's. The potential role for nutrition in maintaining optimal health and function, in retarding the rate of progression of major age-related chronic diseases, and even in modifying some of the age changes in body composition and organ system function - all present major research problems. In addition, there is interest in the several nutrition programs aimed at elderly groups: are they addressing the most important needs and are they effective?

In contrast to younger segments of the American public, we still have rather limited information on the nutritional status of the elderly, particularly of those over age 75 years. Older groups have not been included in the major national nutrition and health surveys based upon population sampling. Thus, existing data derives from more limited regional studies, studies of self-selected individuals. And only two of the recent studies have included a comprehensive biochemical evaluation of nutrient status which can be related to estimates of nutrient intake derived from food diaries (1,2).

There is a further problem in the interpretation of the traditional nutrition surveillance procedures: present standards for the evaluation of dietary, biochemical, and anthropometric measurements are derived largely from much younger population groups. It seems very unlikely that generalizations such as RDA's for "51 years and older", current desirable body weights, or currently used nutrient biochemical ranges will ultimately be appropriate for such a broad age range. Among the reasons are the inherent increases in biological variation, in heterogeneity of health status, and in diversity of environmental stresses which characterize old age.

Present knowledge of the nutritional status of the elderly

In the Boston area, the USDA Human Nutrition Research Center has completed an extensive nutritional status survey of approximately 1,000 elderly volunteer subjects aged 60-98 years. This presentation will address some of the major findings in the 700 noninstitutionalized subjects who were "healthy" in the sense that they had no known terminal or wasting disease process.

Dietary assessment utilized three-day food intake records obtained with the instructional and review assistance of a dietitian. The nutrient data bank at the University of Massachusetts was used for energy and nutrient analyses. As we have recently reported (1), energy intakes declined over this age range among males (from 2,000 Cal/day to 1800 Cal/day) but are constant at about 1500 Cal/day in females. As a proportion of total energy, proteins provided about 17% and fats 34% of calories; the balance, 48 to 49%, was provided by carbohydrates. In this group, as in the study of Garry, et al (2) of New Mexican retirees, protein intake appeared to be adequate (3). Using less than two-thirds of the RDA as a quite arbitrary cut-off point for identifying a "low" nutrient intake, we observed substantial proportions of our population whose three-day average consumption of the following nutrients was "low": vitamins D, B₆, B₁₂, and folic acid; the minerals calcium and zinc. For all except calcium, we believe that the proportions are overestimates. Among the reasons are: underestimates of food intake using diaries in elderly groups; the lack of complete food table data for the vitamins mentioned and for zinc; inappropriate elderly RDA's for some nutrients. Even though dietary supplements were used regularly by up to half the population in this study, the estimates of "low" intakes were very little changed for these particular nutrients when we considered total intake (diet + supplement). As yet unpublished data shows little or no biochemical evidence for any nutrient deficiencies in this population; nor was there clinical or hematologic evidence of deficiency. Calcium, on the other hand, is another matter. About 20% of these elderly males, and up to 38% of the females, consumed less than two-thirds of the RDA for calcium. Thus the low intakes previously observed in middle-aged U.S. populations become even lower among the elderly. As is well known, this may be one factor in age-related bone loss (osteoporosis) in our population.

As is so well documented in middle-aged adults, obesity is an important risk factor in both morbidity and mortality from a variety of chronic diseases. The health consequences of obesity among the elderly are less clear. But in terms of prevalence, obesity remains a very frequent condition among elderly females of all ages (30 to 40% of the population in the Boston study). Among males, on the other hand, the prevalence of obesity declined from 35% in those under age 80 years to only 13% among the older subjects.

Other Factors influencing dietary quality

As noted in all previous dietary or nutrition surveys of adults in the U.S., we have also reported that the intakes of protein and of many micronutrients were significantly reduced in sub-population groups characterized by lower income and by lower educational attainment. In addition, the wearing of dentures (particularly among males) was associated

with significant reductions in dietary quality.

Conclusion

The many dimensions of the nutrition-aging problem present important areas for future basic and applied research. Even in terms of nutrition status, it appears likely that nutritional surveillance of more representative segments of our elderly population will indeed demonstrate a variety of specific problem areas. It is imperative that older age groups be included in future health and nutrition studies.

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METHODS MAKE A DIFFERENCE

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There continues to be a need for dietary assessment methods which can accurately describe the usual diet of individuals or groups. An indication of usual diet is needed to study the relationship of an individual's diet to chronic diseases such as coronary heart disease and cancer. The food frequency method is a standard method of obtaining information on how often an individual consumes a specific food or groups of food over a specified period of time(1). This method of dietary assessment has been the focus of attempts to add the element of quantification, adding how much to how often, which should describe usual diet over a period of time(2). Some investigations have focused on specific nutrients so that the food frequency questionnaires (FFQ) have included only foods that contain those nutrients (3). Others have designed instruments to describe the total dietary intake(4,5,6).

The purpose of the study I will describe was to develop a one-year retrospective food frequency questionnaire, including usual portion size, based on food groups derived from an analysis of food group usage in NFCS 1977-78(7).

The specific study questions were:

1. Are questions about food frequencies and amounts valid indicators of last year's diet? Validity was defined by the degree of correspondence of food frequency, energy intake and nutrient intake between quantified food frequencies for the past year and 16 days of recall/records sampled from the past year.

2. What characteristics of respondents are associated with validity?

The study design required each respondent to provide information five times, four times providing 24-hour recall and three-day records over the course of one year. The fifth time respondents provided food frequency data on the previous year; this interview was conducted about three months after the last record was completed.

Methods:

Sample: The study design required a population evenly distributed between white and black, men and women, and within the age range 25 to 50. 228

respondents completed the study. Table 1 shows the distribution by sex, race, income and education. We also tried to obtain an even split on education, above and below completed high school, rather than a representative sample of the population. Interviewers recruited respondents door-to-door in census tracts with a high proportion of blacks. Age-eligible potential respondents were asked to participate for one year and were told about the requirements for keeping records. Refusal rates were high, around 70 percent in Ypsilanti and 50 percent in Ann Arbor. No detailed records were kept of recruitment refusals but the interviewers felt that more men, and especially black men, refused. Also, fewer blacks than whites completed the study. In the group that completed the study, women have fewer years of education than men and the black women tended to have lower income than other groups. A disproportionately large number of very highly educated black men were included in the final study group.

Dietary Data: The first interview consisted of a 24 hour dietary recall and a brief health and demographic questionnaire. Respondents were given a notebook in which they recorded all food consumed over the following three days. The record was picked up 4 or 5 days later by the interviewer. In the second, third, and fourth rounds, interviewers repeated the same pattern, omitting the health and demographic section, but asking a brief set of questions about life events occurring in the interim between contacts.

Food Frequency Questionnaire: The FFQ was composed of 113 foods or food groups, each listed on a separate slip of paper. The identification and definition of these groups was based on the food group order already built into the data bases, the similarity of their nutrient composition, and the frequency of the foods and patterns of use among foods as they were identified in the Nationwide Food Consumption Survey(7). Butter, margarine, sugar and other items were not separately identified but included as probes to individual foods.

Some foods are used differently depending upon whether they are eaten singly or in mixtures. Prevalence information determined whether foods with essentially separate identities, such as tomatoes eaten raw, cooked, or in sauces, and ground beef as hamburger or in casserole, should be presented to the respondent as separate items.

Typical serving size was asked for each food, except lettuce and an "other vegetables" group. Serving size was omitted for these foods because it is difficult to generalize about average portion size when the foods in the group are different sizes and shapes.

FFQ Administration: The basic format of the food frequency was a set of 113 slips of paper listing the name of the food or food group on the front and a partly precoded recording form on the back. The food frequency was administered in a sequential sorting procedure; the respondent sorted slips under the direction of a trained interviewer. In the final step the interviewer asked the respondent how much of the food was usually eaten. Tools for estimating quantity also used in the 24-hour recall/record were

within reach of the respondent: measuring cups and spoons, respondent's cup, glass and bowl, a ruler and bean bags representing 1/4, 1/3, 1/2, 3/4 and 1 cup volumes. For those foods that the respondent indicated were eaten seasonally, the interviewer asked for the length of the season. The average time required to complete the food frequency questionnaire was about one hour.

Results:

Nutrient Intake: A comparison of nutrient values for the mean of the 16 days of recall/records and the FFQ shows a consistent over-reporting by the FFQ for the total sample (Table 2). In addition to the 16 day mean and the FFQ, the first three day mean values are included to permit a comparison to values we might have obtained if we had seen respondents only once during the year and obtained a 24 hour recall and two day record. These values for the three day means, sets of which were selected at random from the four periods, tend to be very close to the 16 day mean values.

When we compared 16 day mean values to the FFQ values within race and sex groups, we saw that white men have better agreement than the other three groups (Table 3). White men also recorded the highest energy intake, by either method. The FFQ values of white men were about 470 calories higher than the 16 day mean. For black men, values were about twice as high on the FFQ, approximately 1000 Kcal greater.

The mean energy intake for this age group in NFCS 1977-78 was 2512 for white men and 2089 for black men (8). Our three day mean values for white men was 2666 calories and 2163 calories for black men; both were higher by about 100 kcal than NFCS values.

Black women show the poorest agreement between the two methods of all four sex-race groups (Table 4). The FFQ value was about 850 calories or 54% higher than the 16 day mean. The mean energy intake for NFCS for this age group was 1596 for white women and 1452 for black women (8). Our 3 day mean of 1845 for white women was 250 kcal higher than the NFCS value but our 3 day mean of 1552 for black women was closer, only 100 kcal higher than the NFCS value for black women of this age group.

FFQ:Recall/Record Ratio: Another way of measuring agreement, or lack of agreement, between the two methods is through expressing the FFQ and 16 day mean as a ratio.

In Table 5 respondents are categorized according to the ratio of their food frequency calories to their food record calories as follows: less than 0.8 which is equivalent to the mean calories from the FFQ being less than those from the records by approximately 400 calories. 0.80 through 1.2 the next ratio category, is equivalent to agreement within approximately 400 calories. There are two other categories, 1.21 through 1.5 in which the FFQ is greater by 401 to 1000 kcal and greater than 1.5 which is equivalent to the FFQ being more than 1000 calories greater than those from the records.

When we examined the percent of respondents in each agreement category by sex-age groups, an overall chi-square test showed the most apparent difference was the large percent of black women in the category greater than 1.5. Overall, 30-40 percent of respondents showed satisfactory agreement ratios of 0.81 to 1.2. About 30 per cent were somewhat high, ratios of 1.21 to 1.5. Thus approximately 60 per cent of the respondents had satisfactory and somewhat high agreement ratios.

Table 6 shows the mean ratios within six demographic variables in order to determine whether demographic characteristics distinguished respondents with good agreement from those with poor agreement.

These demographic characteristics were not related to the ratios for white men and black women, the groups with the best agreement and poorest agreement between methods. The higher ratios indicate higher FFQ estimates. Among black men, mean ratios were significantly higher for those who had an annual income of less than \$20,000. Among white women, ratios were higher for those who were not in a professional or managerial job. In addition, ratios were higher for white women who had a low Body Mass Index. Women with higher BMIs had better agreement between methods.

Relationships between each demographic characteristic and ratios were also investigated by analysis of variance and contingency table analysis. No consistent relationships were found. Sex-race specific multiple regressions of the ratio value on these variables yielded no significant multiple R.

We also investigated the effects of dietary diversity within agreement groups. The number of foods reported consumed from the different food groups showed no consistent relationship to either method. Time spent in completing the food frequency showed no significant differences between agreement categories. The number of persons in the household was not related to agreement between methods.

In looking for agreement between measures, we found that even when there was agreement, it seemed to be achieved through a series of trade-offs. For example, within the agreement category of 0.8 to 1.2 we found that agreement was achieved by counterbalancing factors such as the under-reporting of foods on the FFQ with reporting foods on the FFQ that are not on the record. In addition, under-estimate of frequency on the FFQ was counterbalanced by over-estimates of serving size on the FFQ.

Summary

The Food Frequency Questionnaire we designed and tested over-estimated values in comparison to the 16-day food records used as the baseline, recognizing that the validity of the records cannot be established. The degree to which the FFQ over-estimated dietary intake differed by race and sex. There were respondents who had relatively good agreement, white males, for example. Demographic characteristics such as age, education, income, marital status, occupation, and Body Mass Index did not explain agreement, or

lack of agreement. Diet diversity, number of persons in the household, and time spend in completing the FFQ were also unrelated to the degree of agreement.

The lack of success in identifying factors that contributed to agreement is probably due to a variety of factors involved. Agreement, expressed as one total score in the comparison between two methods of measuring dietary intake, reflects the final stage of a series of over- and under-estimates involved in the FFQ process.

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Table 1. Participation and Demographic Characteristics of Study Sample

Characteristic	Men				Women			
	White		Black		White		Black	
	N	%	N	%	N	%	N	%
<u>Full Participation</u>	64		43		73		48	
<u>Age:</u> 25-34	35	54	21	49	37	51	23	48
35-50	29	46	22	51	36	49	25	52
<u>Education</u>								
12 years or less	3	5	1	2	21	29	16	33
1-4 years college	41	64	20	47	35	48	23	48
More than 4 years	19	30	22	51	16	22	9	19
Unknown	1	1	0	0	1	1	0	0
<u>Income:</u> \$ 0-9.9	7	11	5	12	7	10	15	31
10-29.9	30	47	18	42	29	40	21	44
30 and over	26	41	20	46	35	48	11	22
No response	1	1	0	0	2	3	1	2

Table 2. Comparison of Nutrient Intake by Food Frequency, Sixteen Day and Three Consecutive Day Mean, Total Sample

	First 3 days, balanced across seasons	16 days	FFQ
Energy, Kcal	2074	2114	2766
Protein, gm	78	79	100
Fat, gm	90	92	119
Carbohydrate, gm	228	231	321
Calcium, mg	839	820	1096
Iron, mg	14	14	20
Vitamin A, IU	5552	5760	12854
Vitamin C, mg	115	120	193

Table 3. Comparison of Mean Nutrient Intake by Food Frequency
and Sixteen Day Recall/Record, Men

	<u>White</u>		<u>Black</u>	
	<u>16 day</u>	<u>FFQ</u>	<u>16 day</u>	<u>FFQ</u>
Energy, Kcal	2714	3182	2175	3179
Protein, gm	99	112	79	110
Fat, gm	120	140	93	136
Carbohydrate, gm	290	356	233	367
Calcium, gm	1086	1241	670	1044
Iron, gm	17	23	14	21
Vitamin A, IU	6509	12581	5228	12317
Vitamin C, gm	141	182	114	207

Table 4. Comparison of Mean Nutrient Intake by Food Frequency
and Sixteen Day Recall/Record, Women

	<u>White</u>		<u>Black</u>	
	<u>16 day</u>	<u>FFQ</u>	<u>16 day</u>	<u>FFQ</u>
Energy, Kcal	1897	2376	1589	2437
Protein, gm	73	92	60	87
Fat, gm	83	102	70	101
Carbohydrate, gm	210	273	180	304
Calcium, gm	859	1128	540	901
Iron, gm	13	18	10	18
Vitamin A, IU	6084	13174	4747	13212
Vitamin C, gm	119	177	98	217

Table 5. Percentage Distribution of Respondents by the Ratio of Food Frequency Mean Calories To Food Record Mean Calories

Ratio of FFQ Calories to Record Calories	<u>Sex and Race</u>			
	<u>Men</u>		<u>Women</u>	
	<u>White</u>	<u>Black</u>	<u>White</u>	<u>Black</u>
<u>Percentage Distribution</u>				
Less than 0.8*	20	7	16	13
0.8 - 1.2	38	40	32	21
1.3 - 1.5	25	23	33	23
Greater than 1.5	17	30	19	44

*Approximate conversion to calories:

Ratio of: Less than 0.8 . . . FFQ smaller than record by 400 or more calories
 0.8 - 1.2 FFQ and record agree within 400 calories
 1.3 - 1.5 FFQ greater than record by 401 to 1000 calories
 greater than 1.5 . .FFQ greater than record by more than 1000 calories

Table 6. Mean Ratio of Food Frequency to Food Record Calories, by Demographic Characteristics, Sex and Race

Demographic Characteristics	Sex and Race			
	Men	Black	Women	Black
	White		White	
<u>Age</u>				
Less than 34 years	1.1	1.7	1.3	1.7
34 and more years	1.3	1.4	1.2	1.5
<u>Marital Status</u>				
Living with someone	1.2	1.3	1.2	1.8
Single	1.2	1.8	1.4	1.4
<u>Education</u>				
Less than 15 years	1.2	1.9		
> 15 years	1.2	1.4		
< 12 years			1.4	1.8
≥ 12 years			1.2	1.5
<u>Occupation</u>				
Professional	1.2	1.4	1.1	2.0
Nonprofessional	1.1	1.7	1.4	1.5
			p<.05	
<u>Income</u>				
Less than \$20,000	1.1	1.9	1.4	1.6
\$20,000 or more	1.2	1.3	1.2	1.7
		p<.05		
<u>Body Mass Index: Wt(kg)/ht²(m)</u>				
Low**	1.1	1.4	1.4	1.8
High	1.3	1.5	1.1	1.6
			p<.05	

*Low for men are index values equal to or below 23; for women, equal to or below 22. Both values are the upper limits for the BMI ranges for medium frames in the 1959 Metropolitan Life Insurance tables.

High for men are index values above 23 and for women, above 22.

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INCOME TRENDS OF THE YOUNG AND ELDERLY

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A popular topic in the media today is the contrast in the economic situations of the young and the elderly. The difficulties of the baby boom generation in securing an economic foothold in society have been vividly described by Frank Levy and Richard Michel, two economists from the Urban Institute. 1/ They show that this particular generation's incomes have risen much slower than the incomes of their parents when they were the same age as their children back in the fifties. Other writers, such as Phillip Longman, have juxtaposed the economic problems of the young with the economic gains of the elderly. 2/ He's pointed to the vast sums of money the Federal government has spent on the 65 and older population and suggests it is disproportionate to their representation in our society.

The purpose of this paper is to review the income trends of the young and elderly as reflected in various income measures published by the Bureau of the Census. Income trends for these groups are examined over the 1950-85 period, with particular emphasis on the 1970-85 period. Certain demographic, economic, and social factors associated with the trends are discussed. The scope of this paper, however, is limited and does not deal with many of the issues recently addressed by Daniel Radner of the Social Security Administration. 3/

* The views and opinions expressed in this paper do not necessarily reflect those of the Bureau of the Census.

1/ See Frank Levy and Richard C. Michel, "An Economic Bust for the Baby Boom," Challenge, March/April, 1986, pp. 33-39.

2/ See Phillip Longman, "Justice Between Generations" The Atlantic Monthly, June 1985, pp. 73-81.

3/ See Daniel B. Radner, Studies in Income Distribution, No. 14, "Changes in the Money Income of the Aged and Nonaged, 1967-1983," Social Security Administration, September, 1986. In his report, he examined income trends by 5-year age groups for both the aged (65 and over) and nonaged (under 65), adjusted for differences in needs of family units of different sizes, and discussed related topics such as changes in inequality and poverty.

The Data

Many analyses of income trends are based on the income statistics collected by the Census Bureau in its Current Population Survey (CPS). Each March interviewers visit approximately 60,000 households around the country and ask a series of questions about the incomes of household members in the previous calendar year. These data are then processed, tabulated, and published each year by the Bureau. ^{4/}

The Census Bureau presents in its reports a variety of income measures for persons, families, and households. The two that receive the greatest attention are the median incomes of families and unrelated individuals. Families are defined as groups of two or more persons related by blood, marriage, or adoption, and residing together. Unrelated individuals are persons 15 years old and over who do not live with any relatives. Another increasingly popular measure is the median (and mean) income of households. This measure combines the incomes of families and unrelated individuals. A household consists of all the persons who occupy a housing unit. The measures that receive the least attention are the mean and median incomes of persons 15 and over, and the per capita measures for families, households, and the population.

The CPS income concept is based on "money" income only. That is, noncash benefits such as food stamps, Medicare, subsidized housing, and free or reduced price school lunches, as well as the many employer-provided benefits (e.g., health insurance) are not included. As is well known, these benefits have come to represent a growing proportion of aggregate income in recent years.

In the following discussion, the "young" were defined as persons age 25 to 34. This age group in 1985 accounted for slightly more than two-thirds of all persons age 20 to 34. The elderly were defined as individuals age 65 and over. The income measures for this broad group mask significant income variation between the "young-old" and "old-old," but it was not possible to separate these groups' income trends in the published data. All income estimates have been adjusted for price changes by the Consumer Price Index and are expressed in terms of 1985 dollars.

Long-Run Trends

"Real" median incomes (incomes in 1985 dollars) between 1950 and 1985 for young and elderly families, that is, families in which the head is 25 to 34 and 65 or older are charted in Figure 1; the real incomes for young and elderly

^{4/} See Current Population Reports, Series P-60, No. 151, Money Income of Households, Families, and Persons in the United States: 1984, U.S. Government Printing Office, Washington, D.C. 1986. In addition to the reports, the Bureau also makes available the CPS microdata files.

unrelated individuals are charted in Figure 2. One fact that is immediately clear is that according to this measure the young have higher incomes. In 1985, the median income for the family in which the head was 25 to 34 was \$26,023 compared to \$19,162 for the family in which the head was 65 or older; for unrelated individuals, the young's median was \$17,211 compared to the elderly's median of \$7,568 (See Table 1.)

Figures 1 and 2 also reveal what has happened to real incomes--as reflected by the medians--of both groups over the last 35 years. Between 1950 and 1970, real incomes of the young and elderly grew steadily with the young's rising slightly faster probably as a result of the strong job market situation in the 1960's. Real income for young families grew by 3.0 percent a year and for elderly families by 2.5 percent a year.

After 1970 or so, however, the income trends of the young and old changed dramatically. Growth virtually came to a halt for the young, while it continued for the elderly. For families in which the head was 25 to 34, median income (in 1985 dollars) declined by 0.3 percent a year and for unrelated individuals it fell 0.6 percent a year on average. During these same years, the incomes of elderly families and unrelated individuals continued to grow at slightly more than 2.0 percent a year. (See Table 1.) It is this stark contrast in real income growth between these groups that has attracted the media's attention.

The obvious question is: Why did real income growth for the young suddenly come to a halt between 1970 and 1985 while it continued for the elderly? ^{5/} Some of the factors that have been associated with these changes can be classified as demographic, economic, and social.

Demographic. Most everyone knows that the young people of today who are between the ages of 25 and 34 are members of the baby boom generation--members of that very large cohort of persons born between 1946 and 1964. The impact of the baby boom on the number of persons in the 25 to 34 year age group is shown in Table 2. Between 1955 and 1970, persons in this age group increased from about 23 million to 25 million--an 8 percent increase. Between 1970 and 1985, however, the 25 to 34 year old population increased from 25 million to 42 million--a 66 percent increase. While the 1970 estimate reflects persons born between 1936 and 1945, the 1985 estimate reflects persons born between 1951 and 1960--the middle of the baby boom years. What was the significance of this for the 25 to 34 year olds in the last 15 years or so?

^{5/} The CPS mean incomes for these groups reflect similar trends.

Richard Easterlin, among others, has written extensively on the causes and consequences of changes in fertility. Easterlin generalizes and suggests, "...a baby boom generation finds the going comparatively tough." ^{6/} This is because of its sheer size: a relatively large cohort of individuals finds itself fiercely competing for the available jobs, housing, education, and other necessities of life more so than a smaller cohort. The consequences of this competition is rather evident when we examine the data on crime, suicides, divorce, births out of wedlock, and other aspects of social stress. While the strength of the relationships between these problems and the maturing of the baby boom generation can be debated, the fact remains that an unusually large number of young people came upon the scene in recent years seeking their niche in society.

Economic. The last decade and a half were years of economic problems. Recessions took place in 1974 and in the 1979-82 periods and unemployment rose sharply. At the same time, inflation soared to annual rates in excess of 10 percent.

Reflecting these developments, young workers, as well as other workers, had problems in the labor market. Unemployment rates for men 25 to 34, rose from around the 2 percent mark at the end of the 1960's to almost 7 percent by the early 1980's. For women of the same ages, the unemployment rates nearly doubled. And the wage picture was particularly bleak for both sexes. Table 3 shows the real incomes of men and women who worked at full-time jobs the year around for selected years in the 1955-85 period. (The major portion of these persons' incomes consisted of earnings from the labor market.) Real incomes for persons with this amount of work experience between 1955 and 1970 increased by roughly 2.5 percent a year for both men and women. In the next 15 years, however, the men's full-time, year-round median income dropped by -0.8 percent a year and the women's grew very little.

The young, of course, derive a substantial proportion of their income from the labor market whereas the elderly don't. In 1985, for example, 83 percent of the young worked at some time during the year while only 15 percent of the elderly did. Consequently, the sluggish economy and weak labor market had a greater impact on the young than the old. In addition, while the incomes of the young were subject to inflation and eroding purchasing power, the incomes of many of the elderly were not. Beginning in 1975 Social Security benefits were indexed with the Consumer Price Index. Moreover, the inflationary spiral which the country found itself in in the late 1970's and early 1980's worked to the

^{6/} See Richard A. Easterlin, Birth and Fortune, (New York, Basis Books, Inc., Publishers, 1980), p.6.

advantage of some of the elderly for it increased the returns from their income producing assets. (The net rental value of owner occupied housing, however, is not counted as income in the CPS data.) And clearly, the existence of Medicare for many of the elderly helped to improve their economic condition. (Medicare is also not counted as income in the CPS.) In short, the elderly were considerably more sheltered than the young from the economic storms of the last decade and a half.

Social. Another factor often alluded to as a negative influence on median family income in recent years has been the growth in one-parent families headed by women. Divorce, marital separation, and children born out of wedlock have all contributed to the increase in single parent families. As the data in Table 4 show, the proportion of all families that are headed by women in 1985 was 16 percent, up from about 12 percent in 1970. This upward trend was somewhat more pronounced among the young: In 1970 about 11 percent of the families were headed by a woman, but by 1985 the comparable proportion was 17 percent. The median incomes of these families in that year was only \$8,900 compared to \$27,735 for all families. Obviously, a growing proportion of these families tended to pull down the overall median for all young families.

Another Perspective on Income Trends

While the trends in the median incomes for the young and elderly over the last 15 years appear to support the notion that the elderly have been doing better than the young, it is important that we look at all the available income data published by the Census Bureau. One set of numbers that has not received much attention are household incomes. As mentioned earlier, households are defined as the persons occupying a housing unit and may include related family members and/or unrelated individuals. Household income data from the CPS first became available in 1967 so it becomes possible to observe income trends in these data over the period in which the elderly were far outstripping the young in real income gains--at least according to the median family income measure.

Real median incomes for households in which the householder was 25 to 34 or 65 and older between 1970 and 1985 also indicate that the incomes of the elderly were rising faster than the young. As shown in Table 5, real incomes of the elderly increased by 2.1 percent per year in the 1970-85 period while they dropped slightly for the young.

But as we all know, many changes were taking place over these years, in addition to the ones discussed above. One of the most significant changes occurred in the average size of our households. At the mid-century point, the average number of persons in households was 3.37 and it drifted slightly downward to 3.14 persons by 1970. But then the decline accelerated over the next 15 years reaching 2.69 persons per household in 1985. The decline, of course, has been associated with the postponement of marriage and childbearing among the young, and an overall shift to different living arrangements.

The drop in average household size was particularly sharp in the 1970-85 period for young households. In households in which the householder was 25 to 34, average size declined by almost one person, from 3.69 to 2.87. But for households with householders age 65 and over, there was hardly any drop at all--from 1.83 to 1.77.

If one adjusts the household incomes of the young and the elderly for changes in household size by using the Census Bureau's income per household member measure, a somewhat different picture of real income trends emerges. ^{7/} As shown in Table 6, for young households income per household member advanced by \$2,000 between 1970 and 1985--an increase of roughly 1.5 percent a year. For elderly households, real income per family member rose slightly more, by \$2,400--or 1.7 percent a year. Clearly, the disparity in income growth during the past 15 years is less glaring using the income per household member measure.

Indeed, when the same adjustment is made to the incomes of all households in the Nation during these years, the real income picture is not as gloomy as the median household and family income measures indicate. Real income per household member grew by 1.4 percent a year in the 1970-85 period; while hardly a robust rate of growth, the increase suggests that real incomes were growing.

Frank Levy and Richard Michel recently discussed the paradox of lackluster family income growth and rising per capita consumption. ^{8/} They suggest that during a period of weak wage growth like the 1970's and 1980's, households had to make certain adjustments in their economic behavior to insure a rising standard of living. And their explanation has particular relevance for the young. Levy and Michel said they made "demographic accommodations," that is, many young persons postponed marriage or didn't marry, young families delayed having children, and some of the wives in these families entered the labor market to help bolster the slow growing earnings of their husbands.

One might debate the "causative" nature of the Levy-Michel argument, but it cannot be disputed that the demographic accommodations they speak of are associated with smaller households. Clearly, a greater proportion of the population is in the labor force today than in 1970 and childbearing has been delayed for many women and a much larger proportion of the young live alone or with other unrelated

^{7/} A per capita or per person equivalence scale adjustment assumes a two person household needs twice as much income as a one person household. This, of course, does not allow for economies of scale in large households.

^{8/} See Levy and Michel, "An Economic Bust for the Baby Boom," p. 36.

persons. Consequently, in selecting income measures by which to judge the economic condition of groups of people, one must also be mindful of the dramatic changes that have taken place in the size of households.

Another factor that should be considered in judging the economic situations of the young and the elderly concerns the income concept of the CPS income data. As mentioned earlier, the CPS uses a money income concept. It does not include the income implicit in many of the noncash benefits received from the government (e.g., food stamps, Medicare, subsidized housing) and from employers (e.g., health insurance, life insurance, pension plans). Both young persons and the elderly receive these benefits to varying degrees and since they are not counted in the CPS income data, we do not have a complete picture of the income resources of both groups.

Noncash income, of course, has become a larger and larger part of total income in recent years. Back in the 1950's and 1960's cash incomes would probably account for all of the income going to the young and elderly. But today the elderly benefit from Medicare and other noncash programs, while the young receive considerably more in the way of employer-provided benefits than their parents did, and are also eligible for certain noncash benefits from the government. Integrating such income information into the CPS income data would provide us with further insight into trends in real income.

The Income Outlook

The outlook for the real incomes of the young and the elderly depends on many factors--the health of the economy, inflation, social policy, living arrangements, etc. Certainly, any projection should involve a number of the income measures discussed earlier, a reconciliation as to why they differ, and an assessment of the impact of noncash benefits on them. Short of this, one might speculate about future income trends of the young--using Easterlin's thinking as a guide.

By 1995 the 25 to 34 year old age group will consist of persons born in the 1961-70 period--a period in which fertility began to decline and the baby boom years came to an end. In other words, the young in 1995 will consist of a relatively smaller group of persons. If Easterlin's ideas are correct about the "tough going" of large generations and relatively easier times of small cohorts, than competition in the job market should be much less and downward pressure on wages not as severe as in the 1970's and 1980's. Consequently, the incomes of the young might be less affected by the factors that retarded income growth for them in the 1970-85 period.

Figure 1. Median Incomes (in 1985 dollars) of Families in Which the Householder is 25 to 34 Years of Age and 65 Years and Over--1950 to 1985

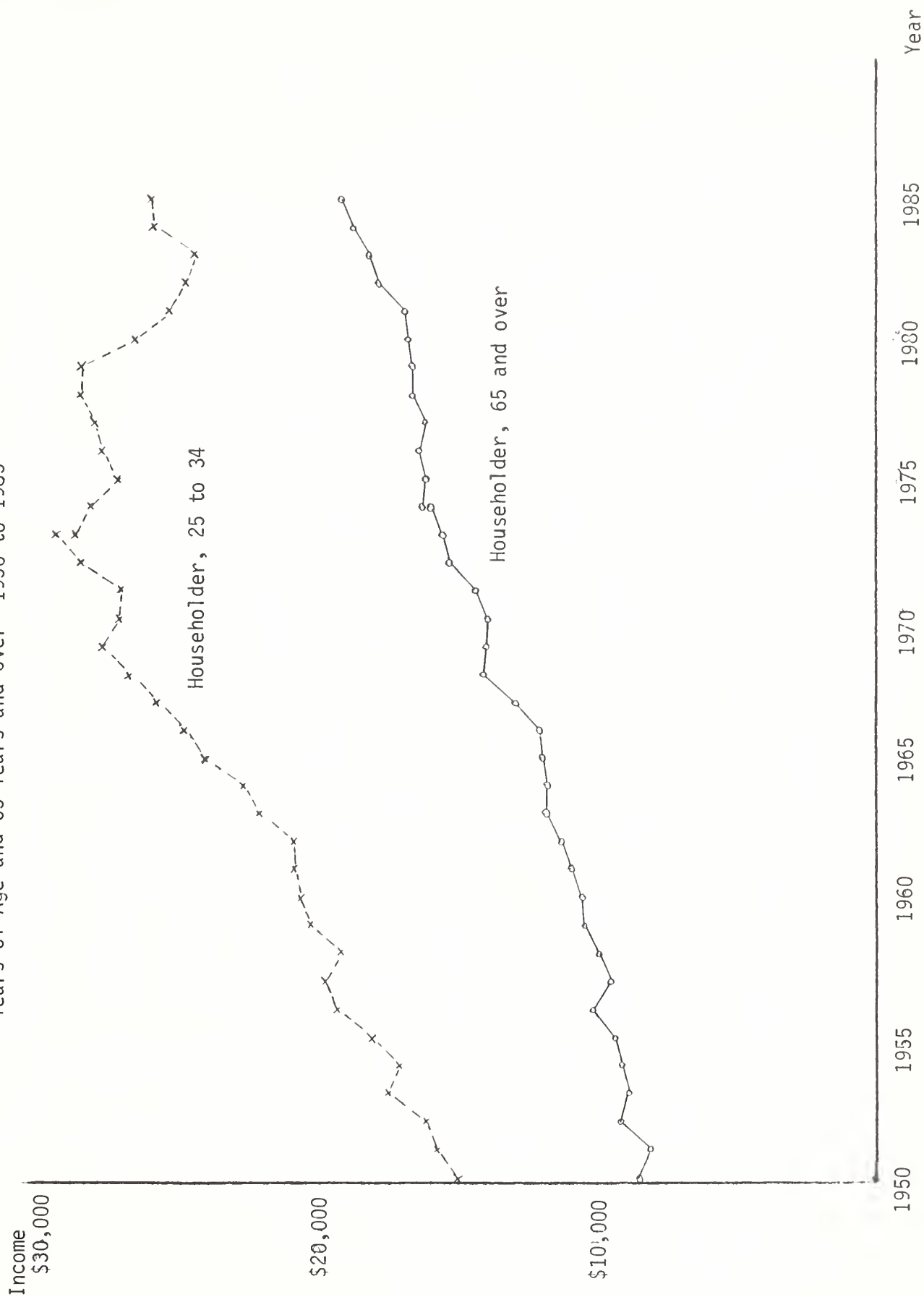


Figure 2. Median Incomes (in 1985 dollars) of Unrelated Individuals 25 to 34 Years of Age and 65 Years and Over--1950 to 1965

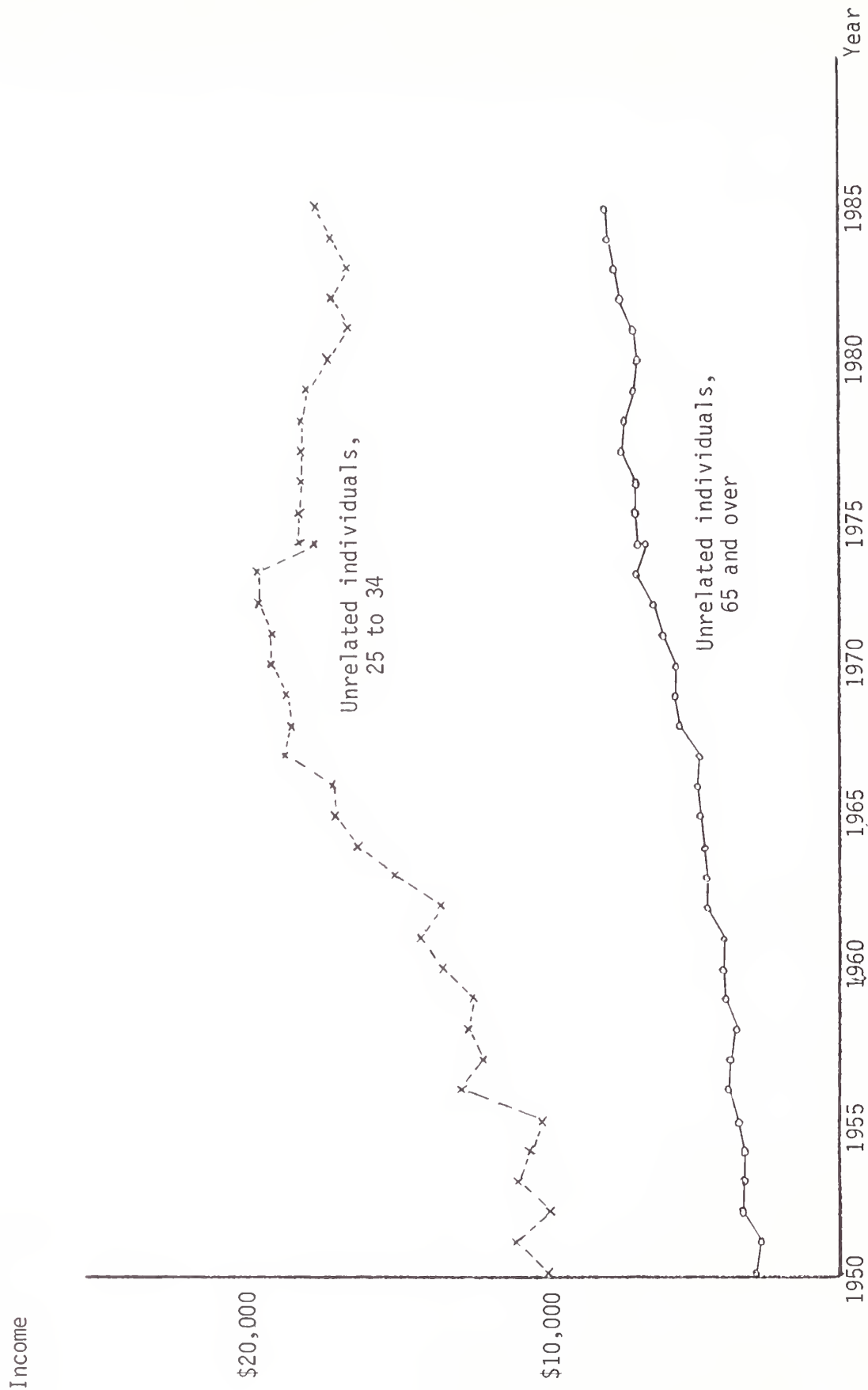


Table 1. Median incomes (in constant 1985 dollars) of families and unrelated individuals between 1950 and 1985 in which the householder/individual was 25 to 34 years of age and 65 or over

Year	Families		Unrelated Individuals	
	<u>25 to 34</u>	<u>65 +</u>	<u>25 to 34</u>	<u>65 +</u>
1985	\$26,023	\$19,162	\$17,211	\$7,568
1980	26,648	16,819	16,925	6,653
1975	27,301	16,104	17,959	6,618
1970	27,297	13,999	18,894	5,405
1965	24,126	11,974	16,635	4,698
1960	20,669	10,523	13,099	3,829
1955	18,042	9,365	9,887	3,387
1950	15,037	8,504	9,599	2,867
Average annual rate of change(%):				
1970-85	-0.3	2.1	-0.6	2.3
1950-70	3.0	2.5	3.4	3.2

Table 2. Number of persons age 15 and over, age 25 to 34, and 65 or over between 1955 and 1985 (in thousands)

Year	Total, 15 and over	25 to 34	65 and over
	<u>and over</u>	<u>-----</u>	<u>over</u>
1985	184,828	42,053	27,322
1980	174,081	37,829	24,685
1975	162,542	31,148	21,662
1970	148,241	25,295	19,254
1965	135,627	21,806	17,650
1960	125,641	22,337	15,571
1955	116,293	23,453	14,013
Total rate of change(%):			
1970-85	24.7	66.3	41.9
1955-70	27.5	7.9	37.4

Table 3. Median incomes (in constant 1985 dollars) of men and women age 25 to 34 who worked full-time, year-round and proportion working full-time, year-round between 1955 and 1985

Year	Men, 25 to 34		Women, 25 to 34	
	<u>Income</u>	<u>Percent FT,YR</u>	<u>Income</u>	<u>Percent FT,YR</u>
1985	\$22,321	70.6	\$16,740	45.1
1980	23,139	70.3	16,056	39.6
1975	25,538	69.7	16,792	40.8
1970	25,282	74.0	16,409	36.6
1965	22,281	77.6	13,839	36.4
1960	19,797	72.7	12,892	32.3
1955	17,343	77.0	11,466	37.2
Average annual rate of change (%):				
1970-85	-0.8	NA	0.1	NA
1955-70	2.5	NA	2.4	NA
NA - Not applicable				

Table 4. Number of female householders, no husband present, and female householders age 25 to 34 between 1970 and 1985 (nos. in thousands)

Year	Total female householders		Total female householders, age 25 to 34	
	<u>Number</u>	<u>Percent of all hhldrs.</u>	<u>Number</u>	<u>Percent of all in age group</u>
1985	10,211	16.1	2,594	17.4
1980	9,082	15.1	2,402	16.6
1975	7,482	13.3	1,769	13.7
1970	5,950	11.5	1,118	10.5

Table 5. Median incomes (in constant 1985 dollars) of all households and households in which the householder was 25 to 34 years of age and 65 or over between 1970 and 1985

Year	Total households	Households in which the householder was:	
		25 to 34	65+
1985	\$23,618	\$25,085	\$13,254
1980	23,121	25,245	11,464
1975	23,585	26,238	11,163
1970	24,197	26,845	9,691
Average annual rate of change(%):			
1970-85	-0.2	-0.5	2.1

Table 6. Incomes (in constant 1985 dollars) per household member and average household size for all households and households in which the householder was 25 to 34 years of age and 65 or over between 1970 and 1985

Year	Total households		Households in which the householder was:			
	Income	Aver. hhld. size	25 to 34		65 +	
			Income	Aver. hhld. size	Income	Aver. hhld. size
1985	\$10,884	2.67	\$9,732	2.87	\$10,622	1.77
1980	10,079	2.73	9,246	2.92	9,456	1.74
1975	9,528	2.89	8,853	3.15	9,084	1.77
1970	8,824	3.14	7,743	3.69	8,203	1.83
Average annual rate of change(%):						
1970-85	1.4	NA	1.5	NA	1.7	NA
NA - Not applicable						

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EXTENDED OUTLOOK FOR PESTICIDES, FUELS AND SEEDS

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INTRODUCTION

This report discusses the near-term outlook for farm inputs. A separate section deals with:

Fuels and Nitrogen
Herbicides/Pesticides
Seeds
Supply Cooperatives

The report stresses overcapacity and downward prices that will aid adequately capitalized farmers while exacerbating the problems of farmers presently under financial stress. It also stresses a consolidation of input supply firms that might impede the progress of biotechnology in plant agriculture.

A note of caution. This author expects lower fuel, fertilizer, pesticide, seed, and machinery prices for the next season. This does not mean lower prices to all farmers. The author is unable to quantify this emerging trend, but is convinced it is of major importance. For example, prices of fertilizer materials vary greatly pre-season and within the planting season. Midwest potash sold for \$60 per ton at retail during early 1986 then rose to \$100 per ton during planting and fell off to \$80 per ton as the planting season ended. (Since all price pressures are downward, no rational dealer wanted to have materials in inventory at the end of the planting season. Simply stated, a dealer could buy cheaper in the fall and avoid inventory costs.)

Only adequately financed farmers can take advantage of the within-the-year input price changes. These price movements tend to exacerbate the problems of farmers with high debt loads by raising their costs. In addition, risk management techniques used by some highly leveraged farmers involve using planting and side dress applications instead of plow-down and pre-emergence. This causes logistical shortages in season and retail price increases at a time of excess supply nationally and serves to put undercapitalized operations at an additional cost disadvantage.

The report also describes emerging changes within the farm input supply industries. These changes are primarily structural and may portend long-run problems.

FUEL PRICES

Agricultural demand for fuels is almost residual to total demand. Refining capacity appears adequate and fuel prices to farmers will reflect the underlying price of crude oil. So much for the obvious.

Fuel/Oil Price Analysis

Current analysis of the actions of OPEC members is unduly complex. It loses sight of the three (and only three) alternatives available to an individual country. These nonexclusive choices are:

1. Leave the oil in the ground.
2. Selling the oil and investing abroad.
3. Selling the oil and investing in the domestic economy.

From an oil producing country's vantage point, oil is exhaustible; its direct employment effects and production linkages are few; it enjoys a relatively strong market--with relatively high income elasticity and low price elasticity. Ceteris paribus, export earnings can be increased or maintained without the concurrent need for increased skilled labor, infrastructure investments, education, health, etc., simply by pumping.

To predict future oil supply, a simple static analysis will suffice. The basis of the traditional theory of exhaustible resources (with assumptions of perfect knowledge and constant extraction costs) is that the producer is indifferent between producing now or leaving the resource (oil) in the ground if the net revenue per unit is expected to rise at a rate equal to the discount rate. The rate of depletion depends on the present price, the expected future price, and the discount rate or its proxy.

Using the yield on U.S. treasury bonds, the prime rate or any number of leading indicators as a proxy for the discount rate (as this is essentially the yield from alternative two--selling the oil and investing abroad) it is obvious that the discount rate proxy has been declining rapidly in nominal terms and much less rapidly in real terms. Ceteris paribus, this would indicate a reduction in the incentive to produce under traditional theory of exhaustible resources.

But during this period and associated with this fall in the discount rate has been a fall in the price appreciation of oil and the value of proven reserves--a major fall in both real and nominal terms. Simply stated, the rate of appreciation has become negative. Repeated attempts by producers at reversing this decline have focused on preventing further declines so that the best reasonable case may well be an appreciation rate of zero. At an appreciation rate of zero, each country has an incentive to produce at its present capacity if the discount rate is positive. That is the case now and in the foreseeable future. ^{1/}

^{1/}The same argument applied to nitrogen from natural gas, phosphate rock mining, and potash mining would show a negative rate of reserve appreciation and incentives to produce during declining prices. It is the author's opinion that North American producers are presently operating on the basis of cash flow. This is especially difficult for producers of anhydrous ammonia where 70 percent of world production of NH_3 is from government owned plants and the natural gas may be costed at or near zero, placing private investment at a great disadvantage.

It is the opinion of this author that permanent changes in the rate of appreciation, coupled with the need for a constant import income, have resulted in a shift to the right of the supply curve. This has caused a reduction in the marginal factor cost of producing a unit of oil and this shift is not short-run.

If the rate of appreciation of proven revenues is expected to remain negative, there is an incentive to invest oil revenue domestically to further increase capacity--thereby adding further downward price pressures and a further supply curve shift to the right.

The author recognizes that these supply arguments could be applied equally to an argument that says, "because of the high income elasticity and low price elasticity of oil, the incentives are present for OPEC to expand its membership and withhold production." The incentives are present--the ability is not.

(For the following, the author relies upon First Edition, World Oil Markets, New Benefits, New Concerns, The Brookings Review, Summer 1986.)

There are several reasons for this:

1. The efficient use of energy has increased so that for a given rise in world GNP, energy consumption increases only 40 percent as rapidly. From 1975 to 1985, oil consumption declined 13 percent while economic output rose 15 percent. (Oil consumption is presently increasing only 2 percent per year.)
2. Within the consumption of energy--the position of oil has declined. From 1979 to 1985 the share of oil in the total primary energy supply fell from 55 percent to 45 percent.
3. Non-OPEC production has increased sharply from 16 million barrels a day in 1974 to 28 million barrels a day in 1985. Half of this increase was from Mexico and North Sea production. These newer producers are less likely to interrupt or curtail U.S. supply.
4. OPEC's market share of world oil supply has fallen from 60 percent in 1979 to 35 percent in 1985. Even more dramatic is the fall in OPEC's share of total primary energy which has fallen from 33 percent in 1979 to 16 percent in 1985.

The more efficient U.S. oil companies have been able to achieve a remarkably low cost of drilling expressed in the cost per barrel of oil discovered. Shell Oil, the leader, has a cost of \$7.31 per barrel of proven reserves discovered. A reasonable lifting cost would indicate profitable production at \$13.00 to \$15.00 per barrel market (West Texas intermediate) and a relatively short-run supply response to domestic oil prices above \$17.00 per barrel. (This would equate to \$15.00 per barrel OPEC oil.)

Conservation

There is a conservation argument for a \$5.00 per bbl. import duty on oil. There is a similar revenue raising argument and this author feels the conservation argument is

invalid and the revenue argument nearly invalid, given the nature of the short-run supply of imported crude oil.

If the U.S. is interested in conserving domestic oil, a price decline in crude below the marginal cost of pumping existing domestic wells will cause them to be capped--the ultimate in conserving domestic oil while imported oil substitutes at low prices. In the event of a price rise, the supply response would be rapid. An import duty would raise the marginal revenue of domestic wells and keep them pumping. This is counter to conservation of domestic resources.

An additional revenue producing argument is advanced, but the supply of imported crude oil is elastic and U.S. consumers would pay the tariff (or most of it). Budget deficits would be better addressed by more direct means.

Other Important Effects

The decline in energy prices has and will continue to lower costs of other inputs. This is shown in the cost of synthetic nitrogen (coupled with excess capacity and low operating rates).

(It is important that the reader understand that anhydrous ammonia, NH_3 , is the main input in all synthetic nitrogens and that natural gas constitutes approximately 75 percent of the cost of production of NH_3 .)

Reduced energy prices have reduced the cost of production of NH_3 in continuous process plants by nearly \$40.00 per ton as shown in Table 1. This is substantial as NH_3 F.O.B. Gulf of Mexico plants was \$102.00 per ton earlier this year and has declined further to \$75.00 per ton at this writing. For the year prices are off 45 percent.

These cost reductions quickly became price reductions because of the low operating rates of fertilizer plants shown in Table 2. These low rates are expected to be exacerbated (see footnote #1).

Summary

If reason prevails in the U.S. and does not (or cannot) within OPEC, continued favorable price levels of fuels can be expected for the coming crop season and subsequent seasons. This will also exert downward cost/price pressures on other inputs such as transportation, drying, and nitrogen products for both feed and fertilizers.

Only a unified OPEC could substantially raise fuel prices during the next crop year. Number 2 diesel fuel fell below 50¢ per gallon delivered to Midwest farms this past planting season. Reduced natural gas prices have caused reductions in propane prices and drying costs will be reduced this fall. All in all, good news for farmers who can pay cash and who manage their fuel inventories.

HERBICIDES/PESTICIDES

With no major change in agricultural policy, herbicides and pesticides will be in adequate supply with downward price pressure. Those products coming off patent such as Monsanto's Lasso® Herbicide will be under major downward price pressure with as

Table 1
Decreasing Cost of NH₃ Production Due to Reduction
in Price of Natural Gas and Efficiency Gains,
1985 and 1986 Fertilizer Years ^{a/}

Fertilizer Year	Cost of Natural Natural Gas Per Million BTUs	Conversion Rate Per Million BTUs ^{b/}	Natural Gas Cost Per Ton
1984-85	\$2.68	36.14	\$96.85
1985-86	\$1.60	35.71	<u>\$57.14</u>
	Reduction in cost:		\$39.71/ton

^{a/} Year ending June 30.

^{b/} Presently a new C.I.L. plant in Courtwright, Ontario, Canada (on the U.S. border) has a conversion rate of 27.

Table 2
Fertilizer Year Estimated Operating Rates
as a Percentage of Rated Capacity ^{a/}
North America, 1985-86 and 1986-87

Chemical	1985-86 Operating Rates	Estimated 1986-87 ^{b/} Operating Rates
Ammonia	71%	61%
Urea	67%	55%
Potash	75%	65%
Feed Phosphates	70%	70%
Fertilizer Phosphates	71%	63%
Sulfur ^{b/}	86%	80%

^{a/} Fertilizer year ending June 30, 1986.

^{b/} Permanent closings may effect (raise) this rate.

^{c/} Two-thirds of domestic sulfur production is used in the production of phosphates.

much as a 30 percent price reduction expected. Products under patent protection can expect to have stable prices.

With 93 percent to 95 percent of U.S. corn and soybean acreage currently being treated with herbicides, the recently announced acreage reduction program in the form of diversions will put even patented products--where substitutes are available--under major downward price pressure.

Table 3 indicates declining sales for corn and soybean herbicides from 1984 to 1985 and that decline is expected to continue in 1986 and be exacerbated in 1987.

Downward price pressure, increasing research and development expenses and reduced sales are causing a quiet consolidation within this industry. ^{2/} It is the author's opinion that this consolidation will have a greater effect on U.S. agriculture than the more widely known farm equipment consolidation or the recent sales of Central Soya's and Ralston Purina's feed businesses.

Industry sources now feel it takes a larger sales base--about \$500 million in agricultural chemical sales--to support a successful research, development, and marketing effort. (Table 3 indicates the soybean and corn segments of the U.S. herbicide chemical market to be less than \$2 billion.)

This year has seen DuPont purchase Shell Agricultural Chemical in an effort to attain a critical mass. Sandoz has purchased Velsicol Chemical and entered into a product sharing arrangement with the industry's acknowledged leader, Monsanto. Union Carbide and Arco have announced their agricultural chemical business and research business, respectively, are for sale. The trend can be expected to continue while new products compete for a smaller market (Table 4).

A long-term problem is emerging. The timing of the products developed through biotechnology indicates they may be introduced after the consolidation of the industry is completed. This may close markets, or at the very least, greatly reduce returns for the many companies engaged in this research. It may preclude the application of biotechnology to minor crops.

SEEDS

This section follows the methodology of the Herbicide/Pesticide section. Just as an acreage reduction program places downward price pressure on herbicides and pesticides where nearly every acre of every major crop uses them, the effect is even more certain in seeds where every acre uses seed.

^{2/}This consolidation is a worldwide occurrence. The European Economic Community is pursuing more liberal policies of fewer but stronger companies, common research and development projects, and manufacturing/distribution integration.

Table 3

U.S. Dollar Sales of Corn and Soybean
Herbicides at Retail, 1984 and 1985

Year	Corn Herbicide Sales	Soybean Herbicide Sales	Total
1984	\$1.055 billion	\$1.3 billion	\$2.355 billion
1985	\$.955 billion	\$1.0 billion	\$1.955 billion

Source: Agricultural Division, Manitz Market Research.

Table 4

Herbicides: Active Ingredients,
Registered by the EPA in 1986

Producer	Brand Name (Chemical Name)	Type	Market
American Cyanimid	Scepter (imazaquin)	Pre-plant, pre-emergence	Soybeans
Dow Chemical	Tandem (tridiphane)	Pre-emergence	Corn
DuPont	Ally (metsulfuron methyl)	Post-emergence, ^{a/} soil-incorporated ^{b/}	Wheat, barley and and fallow land
DuPont	Classic (chlorinuron ethyl)	Post-emergence	Soybeans
Elanco	Sonar (fluridone)	Aquatic herbicide	Milfoil and hydrilla
FMC Corporation	Command ^{c/}	Pre-plant, pre-emergence	Soybeans

^{a/} For wheat and barley.

^{b/} For fallow land.

^{c/} No common chemical name as yet established.

Source: Chemical Week, June 4, 1986.

Seed Corn As An Example

Corn offers an excellent example. Effectively, the 1987 Farm Program brings acreage reductions from the previous 20 percent set-aside to a 35 percent reduction in acres through a voluntary paid land diversion. Mathematically this is an additional 19 percent reduction in acres from the previous year.

With allowances for higher seeding rates and maximum payment to individual farm considerations--certainly 15 percent less seed corn will be used this crop year in comparison to the previous crop year. The impact on undercapitalized, smaller producers will be highly negative and jeopardize their businesses. It will place even greater stress on those producers with varieties not perceived by farmers as having superior qualities. In essence, those producers of commodity type seeds with too much debt and too little market will be in a position exactly like their farmer counterparts.

Pioneer Hi-Bred International may face a historic opportunity. Last year this firm accounted for 36 percent of the U.S. market for seed corn. Seventy-nine percent of its sales are from seed corn. Eighty-nine percent of its profits are from the North American segment of the seed corn business. For fiscal 1985, sales totaled \$821 million, profits were \$179 million before taxes (versus \$126 million in 1984) and the company earned a 24 percent return on stockholders' equity. The company has very little long-term debt and adequate sources of short-term debt. Interim 1986 results show some adverse earnings impact with nine-month earnings of \$84.6 million, off 23 percent from the same period in 1985.

Pioneer offers 100 varieties of seed corn, but 60 percent of its sales are in just 10 varieties. The company has recently announced marketing division consolidations that will allow it to cope with reduced volume. (The seed distribution business is faced with the same problems of costs/volume previously by discussed in Herbicides/Pesticides.)

With a strong financial and market position, Pioneer Hi-Bred International could approach a 50 percent market share in seed corn in this smaller market. This would leave this firm as dominant in seed corn as John Deere is in farm equipment.

By contrast, a major competitor--Dekalb Agresearch--saw its 1985 earnings drop to \$20 million from 1984's \$31 million. Ninety percent of the earnings came from oil and gas operations. Interim 1986 results show earnings have disappeared and in April the firm announced a 10 percent consolidation in seed expenses. The company is experiencing lower sales, earnings, and debt ratings this year. The company has been harmed by declining agricultural and energy markets and its market and market share are under long-term pressure. This should further improve the position of Pioneer--the dominant firm.

This author expects the consolidation of the seed industry to be exasperated by the 1987 Farm Program and this may, in the long-run, effect the competitive nature of the industry. In the short-run, seeds for program crops will be in excess supply.

Biotechnology

The promise of biotechnology in the seed industry has been misrepresented. It will not soon result in start-up companies competing with established firms for two reasons.

The first reason is the already discussed need for economies of scale in research, development, and distribution.

The second reason lies in the biological sciences. While not a major portion of this paper, the reader should understand that research and development on human diseases has been transferable to the use of biotechnology in the diagnosis and treatment of animal diseases. It is not just by chance that International Minerals and Chemical and Monsanto's commercial successes in biotechnology appear to be in animal rather than plant agriculture.

Further, any major applications of the techniques of biotechnology applied to the seed industry involve the regeneration of a complete plant from a single cell. This technology has not been perfected and makes R&D expenditures in this area undesirable because of the long periods of time involved. (Arco recently announced that its Plant Cell Research Division was for sale.) By contrast, the regeneration of an animal from a single cell is the process of conception and rather fully developed in humans and animals.

This author doubts the private sector will utilize the techniques of biotechnology in the domestic seed business because of its long payout, market structure, and technical limitations. This technology will have little if any near-term impact on the field seed business for investor owned or privately owned firms.

The Public Sector

The promise of biotechnology in seeds is real. It just won't stand the test of the market at this time. Normally, this would indicate public investment is in order and the land grant institutions through experiment stations are the logical vehicle.

I was distressed to hear that at a recent meeting at Cornell a representative of an experiment station told of their work to develop a rice variety that could not be grown outside their state boundaries. Clearly, the techniques of genetic material manipulation make this possible in theory and this is a way to eliminate the "spill over problem" in R&D. It is also a terrible waste and misallocation of resources. Earlier I had stated that the process of conception in humans is fully developed. There are some exceptions.

A NOTE ON SUPPLY COOPERATIVES

Much attention is focused on a large projected loss at Farmland Industries this year. Too little attention is being paid to supply cooperatives that have remained profitable and were highly profitable during the late 1970s and early 1980s.

During these profitable years, member savings were retained, reinvested, and put in a revolving fund. In many cases, they are scheduled to be repaid during times of greatly reduced margins. The paying of patronage dividends from revolving funds has the potential to seriously damage many previously successful cooperatives. They may literally become the victims of their own success in the next few years as they liquidate themselves to their members through payments from revolving funds.

ANNUAL AGRICULTURAL OUTLOOK CONFERENCE

United States Department of Agriculture
Washington, D.C.



Outlook '87, Session # 27

For Release: Wednesday, December 3, 1986

SUCCESSFUL MARKETING STRATEGIES

James E. Tillotson, Ph.D.
Vice President-Technical Research and Development
Ocean Spray Cranberries, Inc.

Today we live in a glut economy. There is over capacity and over production of all types of commodities, goods and services. This glut extends not only to agricultural products, but to all types of retail and industrial products, as well as to many other commodities.

You pick up the business section of the newspaper - turn on television, you look in the stores, there is a glut of oil, cars, office space, steel, fast-food outlets, everywhere.

As this group knows only too well, the glut is particularly severe in agriculture and extends to many segments of the food processing and becomes worse with time. Since the turn of the century, technology in this country has allowed us to constantly increase our productivity and efficiency in agriculture. With this technical success in productivity has come the problem of over supply.

Further compounding the problem of domestic glut is the fact that in recent years many parts of the world are becoming self-sufficient in agricultural commodities where we have been the leader. New countries are now moving on to be exporters of their own agricultural products.

Further down the food product chain in retail products, food companies are facing the same dilemma. We have more than adequate production for most types of foods and more than adequate food processing capabilities to satisfy even the most optimistic market projections.

Also, like our agricultural commodities, food products are beginning to come under increasingly competitive pressure from imported products.

In the area of science and technology, biotechnology, has the promise, in a few short years, of turning the glut of today into a mega-glut tomorrow.

Our challenge today in agriculture and in food production is not the growing of commodities and the producing of traditional food products.

The challenge is to develop new markets, profitable markets for agricultural products and our food processing plants.

In hindsight, it appears that for years we have been putting a premium on production in agribusiness, and not giving enough thought and effort to the other side of the equation. The creation of new uses and products for our agricultural products.

We have continued to develop an always larger food production base with the blind assumption that a market would develop and that we would be the world's only source of food. We have been poor in projecting future markets.

The reality of our current glut agricultural economy is forcing a change in our priorities. We are being forced to move from a production emphasis to a marketing mode.

This change in basic strategy from a production model to a marketing model, I think, is further along in food processing than in other segments of agribusiness today.

The realities of the marketplace are forcing this change in strategy of American agribusiness.

In today's supermarket, consumers - our customers - are offered a minimum of at least 17,000 types of food products in the common supermarket. The consumer is faced with a bewildering number of choices of all types of food, food products produced not only domestically, but in increasing number from overseas food producers.

Outside the supermarket, competing with retail products, we have an ever increasing array of sophisticated restaurants, efficient fast-food service outlets and institutional feeding out ready to satisfy consumers' immediate food needs with great efficiency and variety. For the consumer, it is very much a buyer's market.

With all the talk of doom and gloom in many segments of agribusiness, you may have the impression that all is lost - the situation is hopeless.

Well, I don't believe that for one moment. In fact, I am very optimistic and not pessimistic about the future of agribusiness. There is great opportunity for those that assess and understand the reality of agribusiness today.

There are many role models for us to emulate in being successful in agribusiness today. There are many companies that have used creative ability and innovation to develop new and exciting markets for their products. Products that meet consumer needs and wants and deal with realities of our glut economy.

Many companies are beating the over supply problem with smart marketing approaches by creating new products that people buy at premium price and at the same time soaking up the surplus crops resulting from hyperactive production.

Let me tell you about a few smart companies.

The wine industry was plagued by falling consumption, lower prices, a glut of grapes on the West Coast. Sounds like an all too familiar formula for a declining agricultural crop. However, Gallo Wine has turned this industry decline into a marketing success. They saw that people wanted lighter beverages, less alcohol, more fruit juice. So, they created the nations best selling wine cooler, Bartles and James. It is perfect. It uses wine, helps reduce the glut of grapes, gives consumers what they want, an acceptable alternative to heavy alcoholic beverages and is probably very profitable.

In the cranberry industry, a few years ago, we recognized the need to expand our juice market to handle our growers' increasing berry crop. Rather than simply trying to push our established products, we went looking for new concepts, ideas for new juice products that could use cranberries and expand the market for cranberry juice. Out of this search came the idea of producing fruit juice blends using some of the speciality berry crops, fruit that had not been used widely in juices.

Out of this was born our highly successful CRANRASPBERRY Raspberry Cranberry Drink. In a little more than 24 months on the market, CRANRASPBERRY Raspberry Cranberry Drink alone accounts for more than \$60 million in annual sales. Not bad for a two-year old. It is a great example of a new product that consumers want and at the same time helps find a profitable use for our farmers cooperative's fruit. We are now expanding this idea to other speciality fruit - blueberries, guava.

Gallo's wine cooler, CRANRASPBERRY, their success was not luck. It was the result of carefully orchestrated programs by market oriented companies that realize that not any new product will win consumer acceptance.

With 17,000 items in the average supermarket and a record number of new product introductions annually with an ever increasing number of new and interesting prepared food outlets, consumers can be very selective about which foods they buy and where.

For a new product to make it in today's competitive environment, it must meet two levels of consumer acceptability.

The first, often referred to as threshold values, are the obvious attributes of any good food:

- Organoleptic Quality
- Taste
- Flavor
- Texture
- And Color

Also, the quality should be superior to the competitor, and be attractively packaged too. These acceptable threshold values are just the price of admission for a new product.

Established products and older products that remain national brands and beat off new challenges also need to meet these values if they are to prevent the newcomers from replacing them on the shelf.

But these threshold values alone are not enough today to be a winner in a highly competitive and glut market. The product must also have what we call "value added aspects". This means the product must have values that clearly differentiate it from its competitors. These are the values you use in advertising campaigns. These are the values that consumers will remember when they reach for a product on the supermarket shelf over your competitor.

A winning product, whether it be new or established, usually has an easily recognized distinct advantage to its target consumer market.

The product is seen as better tasting, more useful, more efficiency, of higher quality and higher cost/benefit ratio. Today "me too" or secondary generic products tend to be losers. There are just too many opportunities to buy food products and food of the highest quality.

With successful companies today the emphasis is on fulfilling the needs and desires of the consumer as strategy to being economically viable.

This drives us to determine what our customers want, need, use, and will buy! Our orientation is not with what the standard for the product has been in the past. - It is not with the container that has usually been used for this type of product. - It is not with the processing technology that is commonly used or might be available. - Not with any technology our research and development might want to investigate.

Success comes by determining what the consumer wants in taste, flavor, texture, quality, packaging and working back from that. This has often been called the marketing approach rather than the production approach to food processing.

Customers, today with their wide choice, expect and usually obtain a continuously higher quality of food products which are more functional in the form and more attractively and usefully packaged.

Today, successful consumer food product companies try to market products that give the consumer much more than threshold values. We try to meet a higher standard.

Today technology, as it has always been, is the key to developing these "value added" products.

American food companies have been known for decades as being aggressive marketers. What is new today is the increased use of technology as the catalyst in their marketing strategies.

According to a recent issue of Business Week, spending on research and development in the food and beverage sector is up, way up.

In the period of 1984 to 1985, spending in the food and beverage sector has gone up 13% over the last year of total sales, or approximately 11% of profits.

Historically, the industry average for research and development has barely been one-half percent of sales. It now reaches eight-tenth of one percent. The average figures hide what the aggressive marketing companies are doing.

- General Mills spends over \$40 million per year on research and development.
- General Foods approximately \$130 million.

Aggressive consumer goods companies realize there is no way they can get their new products accepted, or for that fact, continue their established brands, without significant investment in technical effort to improve food products.

This investment spending in technology is not made purely in the interest of science or in a search for truth, companies know there is no other way to get their products accepted or assure the continued success of their established brands without a continuing higher and better level of technical input to the products and their manufacture.

The use of technology today is different often from the past. With the need to increase consumer satisfaction, the drive is not to use technology solely for doing something new and exciting. We use technology more carefully. Today, we are more standard. We use technology in a manner to try to give increased consumer acceptability to our products.

The outlook for the food industry domestically in growth in total sales is linked very closely to the growth in population. Dramatic growth will probably only come by stealing market shares from competitors.

An economic model that is often used is the fact that in the United States since the early 1960's the consumption of food and agricultural products has stayed approximately constant per capita consumption of 1,400 pounds per year. Given the fact that our population is growing barely at one percent, the only way to grow is to win market shares from your competitors.

Remembering also that retail sales for food processors are under increasing attack from restaurants and other away from home feeding outlets, and now an increasing flow of imported food products.

AGGRESSIVE COMPANIES MUST:

- * DO MARKET RESEARCH TO DETERMINE CONSUMER NEED
- * DEVELOP PRODUCTS - USING THE BEST TECHNOLOGY - WITH A HIGH DEGREE OF CONSUMER ACCEPTANCE
- * ADVERTISE AND PROMOTE THE PRODUCT AGGRESSIVELY

WHAT KINDS OF FOOD PRODUCTS WILL DO WELL WITH TODAY'S CONSUMER TRENDS?

- * HEALTHY, NATURAL PRODUCTS
- * LOW CALORIE CONTENT
- * LOW FAT CONTENT
- * LOW SODIUM FOODS

IN SHORT - QUALITY PRODUCTS! INNOVATIVE PRODUCTS!

ANNUAL AGRICULTURAL OUTLOOK CONFERENCE

United States Department of Agriculture
Washington, D.C.



Outlook '87

For Release: Wednesday, December 3, 1986
3:45 p.m. - 4:45 p.m.

SUCCESSFUL MARKETING STRATEGIES

Kristin S. Ferguson
Vice President Marketing, Tyson Foods, Inc.

Good afternoon. Those of us in marketing are frequently called upon to discuss how we were successful in executing a marketing strategy designed to meet the needs and wants of today's consumers. In most instances we address new products; their concept, design and introduction resulting from significant consumer research into these needs and wants. We probably do that because new products epitomize the "response-to-consumer needs" aspect of our business.

However, most of us have long been aware that the environment of successful marketing strategy isn't solely confined to being customer-oriented or to effectively responding to consumer needs and wants. Al Ries and Jack Trout, in their book, Marketing Warfare, state that, "To be successful today, a company must become competitor-oriented." And, as if the point were not sufficiently driven home, they go on to assert that "(The) true nature of marketing today involves the conflict between corporations, not the satisfying of human needs and wants."

Now, most of us wouldn't go that far because we believe it loses sight of what our business is all about. But the essential point is valid: the modern company must be aware of what the competition is doing at all times, and a successful marketing strategy must address the competition as well as the customer. In an agriculturally based business such as the poultry industry, this is particularly true.

Poultry may be the Protein of the '80's. Consumption of all poultry products surpassed pork in 1982. Chicken consumption alone is forecast to surpass pork this year, and who knows, perhaps by 1990 "Where's the beef?" will be the irony of the '80's. Yet, given all this, the question still must be addressed: Why should anyone, from a food service operator to a

grocery store consumer, buy our chicken versus a competitor's? Isn't chicken just chicken? Well, not if you're a manufacturer of chicken products. Our success depends on their buying our chicken; not someone else's. We have to make the buyers more aware that there's a difference between our products and Brand X. So what do we do to differentiate a product considered to be a commodity?

We look for the points of difference and capitalize on them. As a manufacturer and marketer of chicken products what strengths do we have over the competition and what competitor weaknesses can we capitalize on. These strengths or weaknesses can be in the form of market share, distribution, brand recognition, etc. Differentiation can be something other than a new product. It can be customer assistance to enhance the buyer's own marketing efforts, it can be new forms of processing and packaging that blur the line between "scratch" and "further processed".

At Tyson Foods, the retail division and the foodservice division each developed marketing strategies to establish a competitive point of difference. One is a program strategy, the other a product strategy.

In the foodservice business, the customer is the foodservice operator serving consumers in a supermarket deli, a restaurant, a college, a business cafeteria -- any place where food is prepared away from home. Currently, Tyson maintains a significant market share in the poultry category with over 300 products categorized into over 30 separate lines. And with these multiple product lines, Tyson Food Service needed an overall divisional program that not only helped our business grow, but also helped the overall markets grow and differentiated our products from the competition. We had to capitalize now on the rapidly expanding market for chicken in foodservice. But, we also had to develop a cohesive marketing program from which all this would hopefully follow.

The marketing strategy developed sounds quite simple: to help the foodservice operator add more chicken to his menu. For example, by increasing the total market size -- more people eating more chicken -- Tyson, with significant market share, would benefit. And we could do this by giving them more ways to put Tyson chicken on their menus. We also wanted to position in the operator's mind that Tyson can help him become a chicken expert and keep him ahead of the latest food trends. We wanted him to know that we don't just sell chicken, we help the people who buy Tyson chicken market our products to their customers. We selected the theme NEW COURSES to unite the written and visual messages, and to communicate Tyson's ability to help operators keep on top of the latest trends. New Courses relates

literally to the "courses" of food pictured in ads, but figuratively we wanted to emphasize the courses...the new direction and trends...that drive the operators menu.

The New Courses program consists of three parts. First, a new advertising campaign to introduce the program, sign up members, and address various menu trends. The ads depict various serving suggestions for one or more of our product lines. The first trend-grazing-supports three lines -- Prime Filets, Wings and Drummies and Breast Tenderloins. The copy is informative yet light. Let me read you the copy for our Wings and Drummies. (Read copy from one ad.)

"Capture the taste of the moment.

5:45 P.M. The usual crowd, plus a few welcomed additions, were laughing it up. I was hungry, so I ordered my favorite, chicken. I took my first bite, looked up and there she was.

Timing. The right food at the right time. Tyson Wings and Drummies are sure fire appetite quenchers for happy hours, pre-dinner appetizers and small entrees. They come breaded and unbreaded, fully cooked or individually quick frozen. Prepare them as is. Or experiment with the help of our comprehensive menu planning program, New Courses™.

A Little Romance. For additional product, preparation and recipe information, give us a call. You'll find that once you couple the right application, with just the right lighting, Tyson Wings & Drummies will capture the taste of the moment. And maybe, just maybe, stir up a little romance."

Additional trends to be addressed are Cajun, American and Off Premise (Take-out).

Second, operators who send in the postcard and meet various selection criteria become New Courses Members. They receive Menu binders which include recipes of all products shown in the ad, recommendations on alternative Tyson chicken products to use in the recipes, tips on proper handling of chicken, etc. They also get a quarterly newsletter addressing each trend in depth and suggestions on how the operator can serve chicken in a variety of ways.

Finally, tying it all together is an 800-4-CHICKEN watts number. If an operator has a question regarding Tyson products or chicken in general, we will help him find the solution to his problem.

The New Courses program shows the operator how to build his menu using chicken -- the hottest growing protein. Even if an operator uses a competitive brand, the risk is minimal. Since Tyson holds the major share, as the market grows, so does Tyson: We will take derivative growth whenever we can get it. Moreover, New Courses positions Tyson in the operators mind as a complete supplier and we always hold the possibility of converting that operator to a brand-loyal Tyson customer. Chicken isn't just chicken when you buy Tyson.

In Tyson's retail division, a major focus is on the fresh meat case. Previously, fresh supermarket chicken carried a small label with name, weight, price/pound and total price. Over the years Tyson has established a brand identity for fresh refrigerated chicken in the fresh meat case, as a way of establishing a point of difference in a commodity product. However, competitors such as Perdue have also succeeded in associating their product with a brand name. You now see a variety of brand-identified chickens in the refrigerated case. Tyson needed a new strategy.

In this case it's a new product. To be specific, a current product in a new delivery system. Adding value, or further processing a product has always been a frozen food strategy. You don't see many frozen whole chickens or frozen parts, but you do encounter filets, patties, chunks, etc.

Combine the value-added strategy with the consumer desire for convenience and freshness and you get -- Chicken Originals -- the fresh new taste in chicken. They are fresh breast filets that have been marinated, seasoned and garnished. Packaged in individual pouches, they heat in just minutes -- in the microwave, in the oven or on the grill and are currently available in 5 varieties: Lemon Pepper, Teriyaki, BBQ, Italian and Butter Garlic.

The Chicken Original products are like no others found in the refrigerated meat case. They have the value-added characteristics of chicken products normally found in the frozen section, but with the added consumer appeal of buying fresh, not frozen. They appeal to the consumer's desire for convenience and freshness; but more, they add value to what many consumers consider to be a commodity product -- fresh chicken. The colorful graphics and packaging give pizzazz to the fresh meat case. They are not just chickens with labels stuck on -- they're in a box, giving a whole new look to the refrigerated case.

Tyson's strengths in the frozen retail cabinet with value-added products and a strong refrigerated distribution system already

give Tyson an edge over competition. Chicken Originals brings these strengths together in a new location -- the refrigerated meat case.

It is too early in the game to tell you how successful the New Courses and Chicken Originals marketing strategies are in differentiating Tyson chicken from the run-of-the-mill commodity product. At this stage, we are extremely gratified with customer response and we anticipate these strategic efforts to further Tyson's growth substantially.

I believe, however, that by telling you how two of Tyson's marketing strategies were developed -- what we looked at, what we considered, what we did -- I can illustrate for you how we develop successful, contemporary marketing strategies. We respond to the market as a whole, we address and capitalize on our strengths and our competitor's weaknesses, we differentiate ourselves from the masses, and all these, together, help us respond to our customers needs while furthering Tyson's growth.

Thank you.

ANNUAL AGRICULTURAL OUTLOOK CONFERENCE

United States Department of Agriculture
Washington, D.C.



Outlook '87, Session #27

Wednesday, December 3, 1986

THE OUTLOOK FOR TRANSPORTATION

Mr. James A. Hagen, Executive Vice President, Sales and Marketing
CSX Distribution Services

GOOD AFTERNOON. I HOPE I AM CORRECT IN ASSUMING THAT ANYONE WHO'S STILL HERE FOR THE LAST SESSION IS REALLY INTERESTED IN DISCUSSING THE SUBJECT AT HAND -- TRANSPORTATION. BEFORE WE MOVE ON TO THAT, I'D LIKE TO SHARE A BRIEF STORY I HEARD THE OTHER DAY. I TRUST THAT MS. FERGUSON -- AND THE REST OF YOU -- WILL APPRECIATE IT.

ONE DAY, A COUNTY AGENT WAS DRIVING ALONG, MINDING HIS OWN BUSINESS, WHEN HE SAW A THREE-LEGGED CHICKEN A FEW YARDS AHEAD. SO HE STEPPED ON THE GAS TO CATCH UP WITH IT. BUT THE FASTER HE DROVE, THE FASTER THE CHICKEN RAN. A MILE OR SO DOWN THE ROAD, THE CHICKEN TURNED INTO A FARMER'S FRONT YARD AND DISAPPEARED. THE FARMER APPEARED WHEN THE AGENT DROVE IN.

THE AGENT ASKED THE FARMER IF HE'D SEEN A THREE-LEGGED CHICKEN. THE FARMER SAID HELL YES, I BRED THE THING BECAUSE I WANTED TO GIVE MY FAMILY SOME MORE PROTEIN AND I THOUGHT THE EXTRA DRUMSTICK WOULD DO THE TRICK.

SO THE AGENT SAID " HOW DOES IT TASTE?" "I DON'T KNOW," THE FARMER ANSWERED. "I HAVEN'T CAUGHT UP WITH THE DARN THING EITHER."

FRIENDS, I AM SURE WE ALL FEEL LIKE THAT FARMER AND THAT AGENT SOMETIMES IN THESE DAYS OF TURMOIL, CONSTANT CHALLENGE AND NEVER-ENDING CHANGE.

MY REMARKS TODAY MAY NOT PRODUCE THE SOLUTION TO CATCHING THAT THREE-LEGGED CHICKEN. BUT I HOPE THAT COMMENTS ABOUT RECENT CHANGES AT CSX AND IN TRANSPORTATION AS A WHOLE WILL DIRECT US TOWARD SOME ANSWERS OR AT LEAST SHED SOME LIGHT ON OUR MUTUAL CONCERNS.

BY RELATING CHANGES IN OUR BUSINESS TO YOURS, I HOPE WE CAN IDENTIFY WAYS TO ENHANCE OUR RELATIONSHIP AND OFFER SOME STABILITY IN THESE TURBULENT TIMES.

JUST SIX YEARS AGO, TWO EVENTS THAT CONCERN US TODAY OCCURRED SEVERAL DAYS APART. THE FIRST, THE STAGGERS RAIL ACT OF 1980, REDUCED REGULATION OF THE INDUSTRY. I'D LIKE TO RETURN TO THAT SUBJECT LATER.

THE OTHER EVENT, ON NOVEMBER 1, 1980, WAS THE CREATION OF CSX CORPORATION THROUGH A MERGER. THAT COMBINATION CREATED A COMPANY THAT OWNED THE CHESSIE SYSTEM RAILROADS AND THE FAMILY LINES, ANOTHER LARGE RAIL SYSTEM.

THE TWO RAIL SYSTEMS WERE GENERALLY OPERATED SEPARATELY UNTIL DECEMBER OF LAST YEAR. AT THAT TIME, CSX CORPORATION ANNOUNCED ITS INTENTION TO RESHAPE THE TWO RAILROADS INTO BUSINESS GROUPS BASED ON FUNCTIONS TRANSPORTATION COMPANIES PERFORM.

THERE WERE SEVERAL REASONS FOR THIS NEW STRUCTURE. MOST IMPORTANT FROM YOUR VIEWPOINT WAS ESTABLISHING A SINGLE CUSTOMER CONTACT POINT FOR CUSTOMERS. WE WANTED TO DELIVER CONSISTENT INFORMATION AND TO IMPROVE RESPONSIVENESS TO CUSTOMER NEEDS.

NOT INCIDENTALLY, THE NEW APPROACH WAS DESIGNED TO MAKE OUR APPROACH MORE EFFICIENT AND IMPROVE RETURN ON INVESTED CAPITAL. WE DETERMINED THAT INCREASED DOMESTIC TRANSPORT COMPETITION, DECLINE IN SO-CALLED SMOKESTACK INDUSTRIES LIKE STEEL AND INCREASING GLOBALIZATION OF THE U.S. ECONOMY MADE THE CHANGE IMPERATIVE.

CSX CENTRALIZED CUSTOMER CONTACT BY CREATING THE DISTRIBUTION SERVICES BUSINESS GROUP COMPOSED OF SALES AND MARKETING AND OTHER CUSTOMER-RELATED FUNCTIONS. ITS EMPLOYEES CREATE INDIVIDUALIZED TRANSPORTATION PACKAGES AND PERFORM RELATED FUNCTIONS LIKE CAR TRACING AND ACCOUNTING AND BILLING.

TWO OTHER BUSINESS GROUPS -- KNOWN AS RAIL TRANSPORT AND EQUIPMENT -- WERE FOCUSED ON SERVICE AND PRODUCTIVITY IMPROVEMENTS. THE RAIL TRANSPORT BUSINESS GROUP PROVIDES TRAIN SERVICE AND THE EQUIPMENT BUSINESS GROUP MANAGES AND CONTROLS FREIGHT CAR EQUIPMENT SUPPLY AND MAINTENANCE.

ALTOGETHER, THE NEW OPERATION IS KNOWN AS CSX TRANSPORTATION. ALSO INCLUDED IN CSX TRANSPORTATION IS THE INLAND WATERWAYS OPERATION OF AMERICAN COMMERCIAL BARGE LINE.

EARLIER THIS YEAR, CSX ACQUIRED SEA-LAND CORP., AN INTERNATIONAL CONTAINER SHIPPING COMPANY. OUR JOINT APPLICATION TO CONTROL SEA-LAND IS PENDING BEFORE THE INTERSTATE COMMERCE COMMISSION. HOPEFULLY, WE WILL RECEIVE APPROVAL TO OPERATE VERY SOON.

ALL OF THESE ACTIVITIES ENHANCED CSX'S CONCEPT OF ONE-STOP SHIPPING. SIMPLY PUT, THAT MEANS WE WANT TO PROVIDE ALL TRANSPORTATION SERVICES A CUSTOMER NEEDS BETWEEN ORIGIN AND DESTINATION. WE BELIEVE THAT A SINGLE CONTROL AND MANAGEMENT SOURCE GIVES THE BEST SERVICE IN EACH STEP OF THE DISTRIBUTION PROCESS.

I AM SURE YOU ARE WONDERING HOW THIS AFFECTS YOU -- THE AGRICULTURAL SHIPPER.

WE ALL KNOW THAT GROWTH OPPORTUNITIES IN AGRICULTURE ARE AS ELUSIVE AS THAT THREE-LEGGED CHICKEN. THAT MAKES IDENTIFICATION OF AND EXPANSION INTO NEW MARKETS CRUCIAL TO SURVIVAL. CONSEQUENTLY, TRANSPORT COMPANIES CAN BE EXPECTED TO POSITION THEMSELVES TO HELP CUSTOMERS PENETRATE MARKETS.

CSX TRANSPORTATION IS COMMITTED TO OPENING AND SERVING MULTI-MARKETS FOR OUR CUSTOMERS. AND WE ARE COMMITTED TO LINKING PRODUCER AND CONSUMER IN THOSE MULTI-MARKETS. WE ACCOMPLISH THAT BY DISSEMINATING INFORMATION ABOUT OUR SERVICE BY ENCOURAGING PRODUCER AND CONSUMER TO GET TO KNOW EACH OTHER BETTER. THAT LINKAGE IS CEMENTED BY CREATING AND EXECUTING INNOVATIVE TRANSPORT PACKAGES.

THE 268,000 CARLOADS OF GRAIN WE MOVED LAST YEAR MADE CSX ONE OF THE LARGEST GRAIN-HAULING RAILROADS IN THE COUNTRY AND PROVIDED TANGIBLE EVIDENCE OF OUR COMMITMENT.

THE HAY TRAINS PIONEERED BY CSX TO HELP DROUGHT-RAVAGED SOUTHEAST FARMERS ARE ANOTHER EXAMPLE. A LESS-PUBLICIZED, BUT EQUALLY IMPORTANT EVENT WAS A TWO-DAY CSX-SPONSORED SYMPOSIUM TO MAKE PRODUCERS AWARE OF NEW, PROFITABLE OPPORTUNITIES TO SELL THEIR PRODUCTS.

TO BACK UP THAT ACTIVITY, WE ENCOURAGED NEW TRAFFIC BETWEEN PRODUCERS IN ILLINOIS, MICHIGAN, OHIO AND INDIANA AND CONSUMERS IN THE SOUTHEAST. THOSE 15-CAR UNIT MOVEMENTS, PRIMARILY TARGETED FEED MILLS THAT BENEFIT FROM THE LOWER DELIVERED COST OF MIDWESTERN GRAIN. THE 15 CAR UNIT, IN ADDITION TO SUITING THE RAIL PLANT CAPABILITIES OF PRODUCER AND CONSUMER, ALSO MATCHES THE CAPACITY OF A BARGE.

THAT'S NOT A COINCIDENCE. ANOTHER IMPORTANT TRANSPORT TREND IS AN INCREASE IN RAIL-BARGE SHIPMENTS. CSX HAS EXPANDED ITS INTERFACE WITH BARGE OPERATORS ON THE OHIO RIVER SYSTEM. WE EXPECT FAR MORE GROWTH.

FOR CSX, THAT KIND OF SHIPMENT IS ATTRACTIVE BECAUSE WE UTILIZE TWO PARTS OF CSX TRANSPORTATION -- THE RAIL SYSTEM AND AMERICAN COMMERCIAL BARGE LINES. BUT WE ALSO ARE READY, WILLING AND ABLE TO WORK WITH OTHER WATERWAY CARRIERS.

LIKE ALL-RAIL SERVICE, THE INTENT IS TO EXPAND OUR CUSTOMERS' MARKET COVERAGE AND ADD VALUE TO THEIR PRODUCTS. CSX IS IN A STRONG POSITION TO DO THAT BECAUSE WE REACH MARKETS FROM THE ATLANTIC TO THE MISSISSIPPI AND FROM THE GREAT LAKES TO THE GULF.

I BELIEVE WE ALSO CAN EXPECT THAT AGRICULTURAL CUSTOMERS AND CARRIERS WILL PAY MORE ATTENTION TO CAR ISSUES IN THE FUTURE. FRANKLY, WE DON'T FORESEE SIGNIFICANT CAR SHORTAGES, GIVEN THE AMPLE INVENTORY CSX AND OTHER RAILROADS POSSESS. BUT THERE MAY BE OCCASIONAL SUPPLY SQUEEZES CAUSED BY THE EBB AND FLOW OF TRAFFIC IN A PARTICULAR AREA.

ON THE OTHER HAND, THE ONGOING BROUHAHA OVER ALLOCATION OF CARRIER AND SHIPPER-OWNED CARS MAY HEAT UP SOME MORE. CSX ISN'T ACTIVELY INVOLVED IN LEGAL PROCEEDINGS CONCERNING THAT ISSUE KNOWN IN THE TRANSPORT BUSINESS AS OT-5 FOR THE INDUSTRY RULES COVERING THAT SUBJECT.

FURTHER USE OF UNIT TRAINS IN EITHER 65 OR 130 CAR SIZES CAN BE EXPECTED.

CSX EQUIPMENT HAS DEVELOPED MARKETING STRATEGIES FOR AGRICULTURAL CARS. THE OPTIONS BEING EXPLORED INCLUDE LEASING, AND MAKING TEMPORARY USE OF COVERED HOPPER CARS FOR GRAIN MOVEMENTS BY USING FIBERGLASS COVERS. THE OVERRIDING POINT, HOWEVER, IS THAT WE WANT TO SUIT THE SHIPPER'S NEEDS AND MANAGE THE CAR SUPPLY FOR MUTUAL BENEFIT.

OTHER U.S. RAILROADS HAVE EMBARKED ON SIMILAR -- AND DIFFERENT -- COURSES. BUT WE ALL FACE A SOBERING REALITY AS WE CONSIDER TRANSPORTATION OF AGRICULTURAL PRODUCTS.

WE ALL KNOW THAT REALITY: LOW PRICES AND OVERSUPPLY FEED ON EACH OTHER AND GENERATE THE CONTINUING CRISIS STATE SO MANY PERCEIVE IN AGRICULTURE. CHANGES IN GOVERNMENT PROGRAMS AND THE UNCERTAIN NATURE OF FUTURE FEDERAL FARM POLICY ADDS TO YOUR CONCERN -- AND CONSEQUENTLY TO OURS.

LIKE MANY OTHERS, WE BELIEVE THE OUTLOOK FOR EXPORT GRAIN IS POOR. LIKE YOU, WE WOULD WELCOME A RETURN TO THOSE THRILLING DAYS OF YESTERYEAR WHEN EXPORT GRAIN SEEMED TO FLOW LIKE WATER. OUR HOPES FOR DOMESTIC TRAFFIC GROWTH ARE MODEST AS WELL. DESPITE AN INDUSTRY-WIDE SLUMP, CSX GRAIN MOVEMENTS HAVE REMAINED STEADY OVER THE LAST FEW YEARS AFTER DECLINING FROM THE PLATEAUS REACHED WHEN EXPORTS WERE BOOMING.

AS WE TRY TO DISCERN SOME PATTERNS IN YOUR BUSINESS, THERE ARE SOME CLEAR, AND I BELIEVE, HOPEFUL SIGNS ON THE TRANSPORTATION FRONT. BOTH RATES AND SERVICE APPEAR TO BE HEADED IN A GENERALLY FAVORABLE DIRECTION. THE KEY WORDS SEEM TO BE FLEXIBILITY AND CHANGE DURING A PERIOD OF ADJUSTMENT.

ON THE RATE SIDE, IT IS CLEAR THAT THE STAGGERS RAIL ACT OF 1980 BENEFITED AGRICULTURAL SHIPPERS. NOT ENOUGH PEOPLE KNOW THAT TRANSPORTATION RATES FOR AGRICULTURAL PRODUCTS DECREASED 22 PERCENT SINCE 1980.

A KEY REASON FOR THAT IS THE PROVISION IN THE STAGGERS ACT PERMITTING RAILROADS TO SIGN CONTRACTS, AS MANY OF YOU WELL KNOW. CONTRACTS TODAY COVER PERHAPS 60 PERCENT OF RAIL INDUSTRY SHIPMENTS OF GRAIN AND RELATED PRODUCTS.

ALTHOUGH THOSE CONTRACTS BENEFIT BOTH CARRIER AND SHIPPER, THERE HAS BEEN CONSIDERABLE DISCUSSION ABOUT THEM. THE QUESTION OF DISCLOSURE OF SOME CONTRACT TERMS CLEARLY IS A SENSITIVE ISSUE. LAST YEAR'S AGREEMENT BETWEEN THE NATIONAL GRAIN AND FEED ASSOCIATION AND THE RAILROADS WAS A CONSTRUCTIVE EFFORT TO ADDRESS THOSE CONCERNS.

QUITE FRANKLY, MANY OF US AT CSX FELT THAT THE COMPROMISE AGREEMENT WAS HEADING IN THE WRONG DIRECTION AND CONCEDED TOO MUCH IN THE AREA OF CONTRACT DISCLOSURE. WE FELT AND STILL DO FEEL THAT COMPLETE CONFIDENTIALITY OF CONTRACTS IN THE GRAIN AREA IS WORKABLE AND SHOULD BE OUR LONG-TERM GOAL. AFTER ALL, THAT SORT OF SYSTEM IS WORKING FOR SHIPPERS, RECEIVERS AND CARRIERS IN EVERY OTHER COMMODITY AREA. IT IS ALSO WORKING FOR GRAIN IN EVERY OTHER MODE. WE KNOW - WE HAPPEN TO OWN A BARGE LINE AND A TRUCKING COMPANY. IN ADDITION, CONSIDER THIS EXAMPLE. WHO WOULD DREAM OF HAVING TO DISCLOSE THE ELEMENTS OF A CONTRACT FOR COMPUTER SYSTEMS -- OR SOME OTHER PRODUCT -- TO YOUR COMPETITORS? THAT'S WHAT WE MAY BE ASKED TO DO.

IN THE END, WE DID SUPPORT THE NATIONAL GRAIN AND FEED COMPROMISE POSITION BECAUSE WE FELT WE COULD LIVE WITH ITS PROVISIONS IN THE SHORT TERM, BUT, MORE IMPORTANTLY, BECAUSE WE FELT IT WOULD ALLOW US TO KEEP IMPROVING THE PRODUCTIVITY OF TWO INDUSTRIES AND KEEP US MOVING TOWARD A GOAL OF TOTAL CONFIDENTIALITY IN THE LONGER TERM.

UNFORTUNATELY, WE ARE NOW FACED WITH THE POSSIBILITY THAT WE WILL BE SADDLED WITH ONEROUS DISCLOSURE REQUIREMENTS AS A RESULT OF A RIDER THAT WAS ADDED TO THE CONRAIL PRIVATIZATION BILL. LIKE YOU, WE ARE AWAITING THE INTERIM RULES FROM THE INTERSTATE COMMERCE COMMISSION LATER THIS MONTH. SPEAKING FOR CSX AND I BELIEVE OTHERS IN THE RAILROAD INDUSTRY, I DO NOT THINK WE CAN LIVE WITH SUBSTANTIALLY RELAXED DISCLOSURE AND DISCOVERY REQUIREMENTS OF CONFIDENTIAL CONTRACT TERMS. I ALSO DO NOT BELIEVE IT WILL BE A HEALTHY DEVELOPMENT FOR U.S. AGRICULTURE.

WE HOPE ALL SIDES RECOGNIZE THE IMPORTANT ROLE THOSE CONTRACTS PLAY IN STABILIZING AND DEVELOPING OUR BUSINESS RELATIONS. I WONDER WHETHER THE DISCLOSURE OF TERMS WILL FOSTER A SHYNESS -- ESPECIALLY AMONG SHIPPERS -- TO ENTER INTO NEW CONTRACTS FOR FEAR YOUR RATES WILL BE DISCLOSED TO COMPETITORS.

IF THAT HAPPENS, THE STABILITY AND MUTUAL BENEFITS CONTRACTS PROVIDE MAY BE DIMINISHED. THE RESULT COULD WELL BE HIGHER RATES AND LESS DEPENDABLE SERVICE. I DOUBT THAT YOU WANT THAT TO HAPPEN.

THE STRUCTURE OF OUR INDUSTRY WILL CONTINUE TO CHANGE. YOU SHOULD EXPECT A WHOLESALE EFFORT BY THE RAILROAD INDUSTRY TO CUT COSTS. THAT MEANS EFFORTS TO REDUCE LABOR COSTS IN FUTURE LABOR NEGOTIATIONS.

OF MORE IMMEDIATE CONCERN FOR YOU IS THE IMMINENT TRANSFER OF LITTLE-USED RAIL LINES THAT ARE marginally PROFITABLE AT BEST FOR US. THOSE LINES WILL BE TRANSFERRED TO NEW, LOWER-COST OPERATORS.

THERE IS LESS REASON TO WORRY TODAY ABOUT ABANDONMENT THAN THERE WAS IN THE PAST. THE LEAST PRODUCTIVE RAILROAD LINES WERE ELIMINATED IN THE 70'S AS A RESULT OF BANKRUPTCY PROCEEDINGS LIKE THE CHICAGO, ROCK ISLAND AND PACIFIC CASE. INSTEAD, WE SHOULD FOCUS ON AN ORDERLY, PRODUCTIVE TRANSFER PROCESS THAT ASSURES FUTURE SERVICE.

RAIL LINES IN RURAL AREAS OFTEN ARE LEADING CANDIDATES FOR ABANDONMENT OR SALE BECAUSE THEIR SINGLE SOURCE OF BUSINESS -- AGRICULTURE -- IS GIVEN TO WIDE SWINGS IN VOLUME. SEVERAL YEARS OF POOR CROPS OR LOW PRICES CAN DEVASTATE ANY TRANSPORTATION COMPANY, JUST LIKE IT DEVASTATES FARMERS.

UNLESS AN ELEVATOR OR SIMILAR FACILITY IS LOCATED ON A MAIN RAIL LINE CARRYING SIGNIFICANT VOLUMES OF OTHER FREIGHT, SALE OR ABANDONMENT IS A POSSIBILITY IN THE NOT TOO DISTANT FUTURE.

I CANNOT THINK OF A BETTER WAY TO ILLUSTRATE THE DIRECTION OF RURAL RAIL TRANSPORTATION THAN TO CONSIDER MY HOME TOWN OF FOREST CITY, IOWA.

WHEN I WAS GROWING UP, TWO RAILROADS -- THE MINNEAPOLIS AND ST. LOUIS AND THE CHICAGO, ROCK ISLAND AND PACIFIC -- SERVED FOREST CITY. NEITHER ONE EXISTS TODAY. RAIL SERVICE IS PROVIDED BY THE CHICAGO AND NORTH WESTERN, WHICH BOUGHT THE REMNANTS OF THE MINNEAPOLIS AND ST. LOUIS.

BUT THE STORY DOESN'T END THERE. THE NORTH WESTERN'S LINE THROUGH FOREST CITY IS ON A SORT OF ENDANGERED SPECIES LIST. THE RAILROAD'S MANAGEMENT HAS SAID PUBLICLY THAT IT WANTS TO REDUCE ITS PLANT SIZE. THAT STATEMENT WAS BACKED UP BY THE RECENT SALE OF AN 800 MILE LINE CENTERED IN MINNESOTA AND SOUTH DAKOTA. A SIMILAR DISPOSITION MIGHT NOT BE TOO FAR AWAY FOR THE LINE THROUGH FOREST CITY.

ELSEWHERE IN IOWA, ENTREPRENEURS HAVE PURCHASED MARGINAL LINES LIKE THE ONE THROUGH FOREST CITY AND INCREASED SERVICE WHILE LOWERING COSTS.

THE SCENARIO IN IOWA IS BEING REPEATED ELSEWHERE AS THE RAILROAD INDUSTRY TRIMS DOWN FOR THE LONG PULL. AS MUCH AS 8,000 MILES OF THE U.S. RAIL SYSTEM, OR ABOUT 6 PERCENT OF THE TOTAL ROUTE MILES, HAS FOUND NEW OWNERS IN THE PAST FEW YEARS. PREDICTING FUTURE TRENDS IN THIS AREA IS DIFFICULT, BUT ADDITIONAL TRANSFERS TOTALING TWO OR THREE TIMES THE PRESENT FIGURES AREN'T INCONCEIVABLE ON A NATIONWIDE BASIS.

WE AT CSX -- LIKE MANY OTHER RAILROADS -- ARE REVIEWING NUMEROUS OPTIONS. I AM SURE MANY OF YOU ARE WONDERING WHAT THIS WILL MEAN TO AGRICULTURE. THE SHORT ANSWER IS THAT YOU SHOULD BE PREPARED FOR A PERIOD OF ADJUSTMENT. THAT ADJUSTMENT CAN BE EITHER SMOOTH OR QUITE PAINFUL, DEPENDING ON SEVERAL FACTORS.

THE AGRICULTURAL INDUSTRY CAN HELP BY TAKING AN ACTIVE, SUPPORTING ROLE IN EFFORTS TO SAVE RAIL SERVICE. YOU MAY BE ASKED TO OFFER MORE THAN MORAL SUPPORT AT SOME POINT IN THE PROCESS. SOME OF THESE NEW RAIL VENTURES HAVE BEEN UNDERWRITTEN IN PART BY SHIPPERS, THOUGH MANY OTHERS HAVE DIFFERENT EQUITY SOURCES.

ANOTHER PRESSING QUESTION INVOLVES THE EFFORTS BY LABOR INTERESTS TO HALT THIS TREND. WHEN UNION WORKERS ARE SEPARATED BY LARGE RAILROADS, THE CARRIERS ASSUME LABOR PROTECTION COSTS. THOSE COSTS RANGE FROM ONE YEAR'S SALARY UP TO \$200,000 PER PERSON IN MERGER AND ACQUISITION CASES.

THOSE PAYMENTS, MANY OF WHICH ARE REQUIRED UNDER OUTMODED RAIL LABOR LAW, FAR EXCEED UNEMPLOYMENT BENEFITS TO OTHER DISPLACED WORKERS. RAIL LABOR INTERESTS ARE TRYING TO HAVE THOSE SO-CALLED PROTECTION PAYMENTS EXTENDED TO NEW OPERATIONS LIKE THOSE IN IOWA AND ELSEWHERE. IF LABOR SUCCEEDS, THEY MAY WELL DOOM THE ENTERPRISES BY PRODUCING ABANDONMENTS INSTEAD OF SALES. THOSE LABOR PROTECTION CONDITIONS COULD COST SOMEONE MILLIONS OF DOLLARS THAT COULD HAVE BEEN BETTER SPENT ON OTHER PROJECTS.

THE IRONY IS THAT A VERY HIGH PERCENTAGE OF THOSE PEOPLE FOR WHOM LABOR WANTS PROTECTION BENEFITS OFTEN WIND UP WORKING FOR THE NEW RAILROADS. THUS, ADDING PROTECTION BENEFITS WILL EITHER SINK NEW VENTURES BEFORE THEY FLOAT OR INCREASE COSTS FOR THE NEW OPERATOR OR THE PREVIOUS OWNER.

ANY HELP THAT YOU AS POTENTIAL USERS CAN GIVE US IN THIS AREA AS THESE PROTECTION BATTLES ARE FOUGHT IN 1987 AND BEYOND CERTAINLY WILL HELP US BOTH.

THE OTHER HIGHLY IMPORTANT NEED ALL PARTIES MUST ADDRESS IS TO IDENTIFY AND ENCOURAGE RESPONSIBLE BUYERS FOR THOSE RAIL LINES WORTH SAVING. AT THE SAME TIME, YOU IN AGRICULTURE -- AS THE FUTURE CUSTOMER -- SHOULD BE PREPARED TO FOCUS EFFORTS ON THE LINES WORTH SAVING INSTEAD OF PRESSURING THE RAILROAD OR PUBLIC AGENCY TO PRESERVE A LINE WITH LITTLE CHANCE OF SUCCESS.

I CANNOT EMPHASIZE ENOUGH THE NEED TO SCRUTINIZE A POTENTIAL BUYER'S FINANCES CLOSELY. COUNTERBALANCED AGAINST SUCCESSES LIKE THE CHICAGO, CENTRAL AND PACIFIC OR THE IOWA NORTHERN RAILWAY IN IOWA ARE DISMAL FAILURES THAT LEAD TO ENDLESS LAWSUITS AND AN END TO RAIL SHIPMENTS. THE RESULT? SUFFERING FOR THE SHIPPER, RECEIVER AND THE CARRIER THAT WELCOMED SOME REVENUE FROM FORWARDING THE FLEDGLING CARRIER'S FREIGHT.

ON THE OTHER HAND, WHEN VENTURES DO SUCCEED, THE SHIPPER OFTEN RECEIVES BETTER SERVICE BECAUSE THE NEW OPERATOR'S LOWER-COST PROFILE AND LOCAL FOCUS ENHANCE BOTH BUSINESSES.

AS VIABLE NEW RAIL VENTURES EMERGE, OTHER CHANGES ARE LIKELY, TOO. WE ANTICIPATE SUBSTANTIAL GROWTH IN RAIL-BARGE SHIPMENTS THROUGHOUT THE INLAND WATERWAY SYSTEM. SHORT-DISTANCE MOVEMENTS BY LOWER-COST RAIL OPERATORS TO RIVER TERMINALS FOR LONG-HAUL WATER TRANSPORT WILL BE MORE COMPETITIVE IN THE FUTURE.

FOR THE LARGE RAIL SYSTEMS, THERE WILL BE CONTINUED EFFORTS TO FOCUS BUSINESS ON HIGH-DENSITY LINES THAT CARRY A WIDE VARIETY OF FREIGHT. AT THE SAME TIME A HARMONIOUS WORKING RELATIONSHIP BETWEEN NEW OPERATORS AND ESTABLISHED LARGE RAIL SYSTEMS MUST EMERGE.

IN SOME WAYS, IT SEEMS LIKELY THAT WE ALL WILL HAVE TO RUN EVEN FASTER IN THE FUTURE TO CAPTURE THAT THREE-LEGGED CHICKEN. RUNNING FASTER ACTUALLY MEANS WE MUST TRY HARDER TO IMPROVE OUR UNDERSTANDING OF EACH OTHER'S NEEDS. THE COMMUNICATIONS LINES MUST BE KEPT OPEN AND HUMMING.

WE MUST APPRECIATE INTERDEPENDENCE BETWEEN TRANSPORTATION COMPANIES AND AGRICULTURAL SHIPPERS AND RECEIVERS. WE MUST BE CREATIVE AND FLEXIBLE BOTH IN NEGOTIATIONS AND IN SEEKING ANSWERS TO THE OUR COMMON PROBLEMS. I WELCOME ANY SUGGESTIONS YOU MIGHT HAVE -- ON CATCHING THAT THREE-LEGGED CHICKEN OR ON ANY OTHER SUBJECT OF MUTUAL CONCERN. THANK YOU VERY MUCH.

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FARM INCOME OUTLOOK

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The most important economic factors determining farm income in 1986 will also be major determinants of 1987 farm income---declining farm production expenses and large Federal outlays. Current dollar production expenses could decline 2 to 4 percent, falling to levels last seen in 1979. This would be the third consecutive annual decline in expenses, an event exceeded only once (during the 1929-1933 period) since 1910. The combination of a rapid fall in fuel prices, declining interest rates, lower outstanding farm debt, and reduced planted acres have been the main factors driving expenses down in 1986. Most of these factors will again be influential in determining 1987 expenses.

Complimenting declining expenses will be unprecedented levels of direct Government subsidies. Because of the scope and objectives of the Food Security Act of 1985, a strong Government role and record-large subsidies were not unexpected. Assuming average yields in 1987, the Government, through CCC loans, cash payments, and marketing certificates, could directly account for about 17 percent of gross cash income in the sector. This compares with about 15 percent in 1986 and 5 percent as recently as 1984. Because of the strong boost provided in tandem by rising payments and declining expenses, 1987 constant dollar farm income will likely rise above 1986 levels. However, not all farms or farm types will share equally in the increase.

Prices and Output

Because of a third consecutive year of strong crop output and the effects of reduced CCC loan rates, prices received by farmers for all commodities will likely fall about 5 percent in 1986 to the lowest level since 1978. Crop prices are expected to average 13 percent below 1985 levels and 24 percent below their 1984 peak. Most of the decline in 1986 has come during the second-half of the year and has been due to lower prices for commodities under farm programs. Program commodities include food grains, feed grains, soybeans, peanuts, cotton, tobacco, sugar crops, milk, wool, and mohair.

Prices received for livestock rose about 2 percent in 1986 as higher poultry and egg (+8%) and meat animal (+3%) prices outweighed lower milk prices (-2%).

The "all milk" price has not risen since 1981. Broiler prices rose more than a tenth in 1986 due largely to stronger demand caused by increased restaurant sales of chicken, stronger exports, and falling pork supplies. Temporary impacts on supply from drought-reduced growth rates and broiler losses may also have affected prices this summer.

In 1987, prices received for all commodities are expected to fall slightly with crop prices falling to their lowest levels since 1973. Although only gaining 3 to 5 percent, livestock prices would exhibit their largest annual increase since 1979. As in their peak year of 1979, meat animal prices are expected to lead the rise. Prices received for milk, broilers, and eggs are forecast to decline somewhat.

Prices paid by farmers for all items (which includes farm household goods) fell 1 percent in 1986 for the second consecutive year. Considering just farm production inputs, prices paid fell 3 percent this year, the same as 1985. The precipitous drop in fuel prices (-17%) this past spring, plus the falloff in fertilizer prices (-8%) and purchased feed (-7%) led an array of declines centered in manufactured and farm-origin inputs. With oil prices falling as low as \$10 per barrel, the index of nonfarm-origin inputs declined 5 percent. Prices paid for inputs originating on farms fell 3 percent as lower corn prices left feed and retail seed prices (-3%) below a year earlier.

Prices Received and Paid by Farmers, 1983-87

Item	:	1983	:	1984	:	1985	:	1986F	:	1987F
	:	<u>Percent change from previous year</u>								
Prices Received:	:									
Crops	:	5.8		8.6		-13.7		-13		-10
Livestock	:	-2.8		3.5		-6.8		2		4
All commodities	:	1.5		5.2		-9.9		-5		-1
	:									
Prices Paid:	:									
Production items	:	2.0		1.3		-2.6		-3.3		-3
Commod. & services,	:									
interest, taxes,	:									
and wages	:	2.5		1.9		-0.6		-1.2		0
Farm origin inputs	:	3.6		0.0		-7.6		-3.0		-2
Nonfarm origin	:	1.9		1.8		0.6		-4.8		-2
Ratio 1/	:	-1.2		2.4		-8.1		-4		-1
Addendum:	:									
CPI-U	:	3.8		4.0		3.8		2		3
PPI-finished goods	:	0.6		1.7		1.8		1		4

F = Forecast 1/ Index of prices received by farmers for all commodities divided by the index of prices paid for commodities and services, interest, taxes, and wage rates, 1977 = 100.

Source of historical data: USDA, NASS and Labor Dept., BLS

In 1987, prices paid by farmers for farm production inputs are expected to fall about 3 percent for the third consecutive year. Feed (-9%) and fertilizer (-8%) prices are expected to decline the most. Continued low feed grain (especially corn) prices, ratcheting down with the lower announced CCC

loan rates and burdensome stocks will help keep prices paid down for this important livestock expense. Fertilizer prices are expected to fall in response to both lower natural gas prices and reduced planted acreage. Because of somewhat stronger export potential, potash and phosphate prices may not exhibit the downward trend expected for nitrogen next year. Prices paid for feeder and replacement livestock may rise 4 to 6 percent in 1987 due mainly to increased feeder steer prices. Fuel prices are not expected to change as rapidly in 1987 as during this year with prices assumed to average about 4 to 6 percent below 1986 levels. However, the benefits from the 1986 price fall will continue to accrue to farmers in 1987 in the form of lower general input price inflation as producers of other goods incorporate reduced energy costs into their own pricing structures.

Total farm output in 1986, although 5-percent lower than the record-high 1985 level, will likely be the fourth highest on record. Record high yields for corn, sorghum and rice and a near record for soybeans partly offset the decline in harvested acres. Cotton, peanut, and tobacco yields were off substantially due to the impact of drought in the south. Livestock output will probably be record-high in 1986 despite reduced meat animal production. Both dairy and poultry production will likely set new highs in 1986.

Farm Output, Input, and Productivity, 1983-87

Item	:	1983	:	1984	:	1985P	:	1986F	:	1987F
Percent change from previous year										
Output:	:									
Crops	:	-25.4		26.1		4.5		-7		-2
Livestock	:	1.9		-1.8		2.8		1		-3
Total	:	-17.2		16.7		6.3		-5		-4
Input use	:	-3.0		1.0		-4.1		-3		-2
Productivity	:	-15.5		17.3		10.4		-2		-2

F = Forecast P = Preliminary.

In 1987, farm output is expected to decline again in response to further reductions in crop acreage, the expected return to trend yields, and significant reductions in meat animal and milk production. Total crop output is expected to be drawn down largely by reduced feed grain production caused mostly by the 20 percent acreage reduction program and the 15 percent paid land diversion. Poultry and egg output will likely be record-setting again in 1987 as expansion in broiler and turkey production continues.

Farm output per unit of input in 1986 will likely fall in 1986. However, because of reduced input use and excellent weather in the Corn Belt, productivity was second only to the 1985 record. In the year ahead, productivity may again decline with both crop and livestock output expected to fall, offsetting a projected decrease in input use.

Cash Receipts

Total cash receipts from 1986 open market sales and net CCC loans are expected

to fall 6 to 8 percent from 1985's \$142.1 billion. Preliminary data through the third quarter indicated receipts were trailing those of 1985 by about \$9 billion, with all the decline accounted for by crops. Most of this decline will come from commodities under Federal farm programs. Program receipts, which will account for about 41 percent of all receipts in 1986, peaked in 1974 when they made up 51 percent of the total. Since 1960, these traditional commodities have accounted for 38 to 48 percent of all receipts with the percentage creeping up from a steady 41 percent during the 1960s, to a fluctuating 44 percent average during the 1970's to a consistent 46 percent from 1980 to 1985. Indicators point to a return to levels seen during the 1960's for the next few years.

In the year ahead, cash receipts are expected to decline 1 to 3 percent as crop receipts fall 5 to 7 percent, outweighing a 1 to 3 percent rise in livestock. A combination of a return to trend yields and reduced harvested acreage caused by strong farm program participation should leave 1987 crop production below that of 1986. Assuming a normal marketing pattern, continued sluggish exports, and the usual seasonal pattern of CCC loan placements, overall marketing volume will likely fall. Given the burdensome stock situation for many commodities, the large number of marketing certificates in the circulation, and sluggish demand, market prices will likely remain at or below announced loan rates throughout the year.

Because of poor prices and strong program participation, CCC loans are forecast to contribute 16 to 18 percent of crop receipts in 1987. Net loans accounted for 16 percent of crop receipts in 1985 and are expected to contribute 16 percent again during calendar 1986. Corn loans totaled 43 percent of all 1985 net loans as 35 percent of the record-large corn crop was placed under loan. Corn is expected to account for over half of 1986 and 1987 loans. Despite lower loan rates, the total value of corn loans during calendar 1986 and 1987 could equal or exceed the 1985 record as a larger percentage of the crop is expected to be placed under loan. However, loan redemptions will likely rise in the year ahead as the volume of marketing certificates grows, putting downward pressure on net loan values.

In 1986, food grain receipts are expected to fall precipitously as lower prices received and smaller 1986 production combine to drop wheat, rice, and rye cash receipts about a third from a year earlier. Rice production fell due to lower harvested acreage which outweighed a record U.S. average yield of 5,626 pounds. Net CCC loans will probably contribute 45 percent of rice cash receipts and 22 percent of wheat receipts. In the coming year, food grain receipts will likely decline again as reduced CCC loan rates and lower average market prices outweigh increased marketings caused by stronger 1987 production.

Lower prices and production in tandem will cause feed crop receipts to drop substantially in 1986, perhaps a fourth below the strong \$21.4 billion of 1985. Net CCC loans will likely provide about 40 percent of total feed crop receipts in 1986 compared with 28 percent in 1985. Because of lower prices and reduced marketings, corn receipts will likely total \$4 billion less than the record \$16.0 billion of 1985. In 1987 feed grain receipts may fall \$2 to \$3 billion as both marketings and prices fall. The 15 percent paid land diversion will likely cut harvested acres and production of feed grains, leading to lower second-half marketings. The lower receipts will likely

impact the top two corn states, Illinois and Iowa, the most. Illinois, which derived 45 percent of its farm cash receipts from sales of feed in 1985, will likely feel the 1987 decline more than the less concentrated Iowa, which is also the top pork producing state.

Iowa is also where a possible shift in the corn marketing pattern may be centered during 1986 and 1987. Because relative price ratios may continue to favor livestock production and sales, more grain may be directly fed on-farms where produced rather than sold on the open market. The trend during the past two decades has been toward increasing specialization and direct sales of grain in lieu of marketing the grain through livestock. Corn sales in 1961 accounted for roughly 40 percent of total corn produced, while in 1985, estimates suggest three-quarters of the crop was sold or placed under CCC loan.

Oil crop receipts will also likely decline in 1986 and 1987, although not as rapidly as those for food and feed grains. Soybean receipts may decline a tenth in 1986 due mostly to reduced prices and loans rates. The 1986 soybean yield was the second-highest on record while the peanut yield, hurt by the severe Southeastern drought (especially in Georgia, the biggest peanut producer) fell nearly a fifth. Peanut receipts which fell 13 percent in 1985, could fall 7 to 9 percent this year because of lower marketings. In 1987, peanut yields and receipts may recover all of the losses incurred in 1986. However, lower average prices for soybeans, sunflowerseed, and flaxseed could leave these receipts under their respective 1986 totals.

Dry weather in the Southeastern U.S. and lower prices will likely leave receipts for cotton lint and cottonseed 20 to 25 percent below the \$3.8 billion of 1985. With 1986 cotton yields down an average of 84 pounds for the nation, and farm prices and loan rates below those of 1985, fourth quarter receipts (which account for 70-75 percent of total cotton receipts) may fall \$300 to \$400 million below those of a year earlier. CCC loan redemptions, reflecting marketing certificate activity, caused second and third quarter 1986 cotton receipts to become negative. Because of light marketing activity and seasonal loan redemptions, it is not unusual for the second quarter to show negative receipts. However, a negative third quarter is unprecedented, with the likely cause being use of marketing certificates to redeem loans. A similar quarterly pattern seems likely for 1987, with annual receipts registering only a small decline as yield-induced stronger production and marketings about offsets lower prices.

Regarding receipts for other crops, tobacco will likely fall nearly a third in 1986 because of drought-cut yields. Tobacco receipts may not recover this loss next year with prices and production expected to average near or below those of 1986. Vegetable receipts are expected to rise 1 to 3 percent in 1986 despite lower potato receipts. Potato receipts, which account for about 20 percent of the total, are expected to fall about a tenth as both prices and marketings average below 1985 levels. Prices for commercial vegetables (excluding potatoes, dry beans, and sweet potatoes) rose about 2 percent in 1986 and are expected to rise 2 to 4 percent in the coming year. Receipts for potatoes and dry beans may show small gains in 1987, pushing total vegetable receipts up modestly. Fruit and nut receipts likely fell 4 to 6 percent in 1986 as production of apples, grapes, peaches, pears, almonds, and walnuts declined. Citrus output for 1986/87 could be well above a year earlier and

will be partly responsible for lower fruit prices for at least the first half of 1987. The "all-fruit" price index likely fell about a tenth in 1986 and may fall about that much next year. However, stronger marketings brought about by larger citrus crops and recovering noncitrus yields, may leave receipts slightly above 1986.

Cash Receipts, 1983-87

Item	:	1983	:	1984	:	1985	:	1986F	:	1987F
	:	-Billion dollars-								
Crops 1/	:	67.0		69.2		72.7		61		58
Food grains	:	9.7		9.6		8.8		6		5
Feed grains & hay	:	15.4		15.7		21.4		16		13
Oil crops	:	13.5		13.9		12.2		11		10
Fruit & vegetables	:	14.6		16.0		15.4		15		15
Other crops	:	13.8		14.0		14.9		13		14
Livestock	:	69.5		72.9		69.4		71		72
Meat animals	:	38.9		40.8		38.2		39		40
Poultry & eggs	:	10.0		12.2		11.2		13		13
Dairy products	:	18.8		17.9		18.1		18		17
Other livestock	:	1.8		1.9		1.9		2		2
Total	:	136.5		142.2		142.1		132		130

1/ Includes net CCC loans. Totals may not sum due to rounding.

F = Forecast as of 11/86.

For livestock, the strongest subsectors during 1986 have been hogs and poultry. While cattle and dairy receipts each fell slightly because of lower average prices, stronger prices boosted hog receipts about a tenth and contributed to increased receipts for broilers, turkeys, and eggs. Cash receipts for red meats will likely rise 1 or 2 percent in 1986, based solely on stronger hog prices, which will push hog receipts up for the first time since 1982. The farm price for barrows and gilts is expected to average near \$50 in 1986 and could go higher next year. Despite the projected decline in marketings this year and next, cash receipts for hogs will likely gain about \$1 billion in 1986 and another 6 to 8 percent in 1987. Net returns to hog producers are expected to remain favorable through 1987 as hog prices remain relatively strong and feed costs remain below a year earlier.

Receipts from cattle and calves for 1986 are projected to remain near to slightly below 1985 levels. Slightly lower fed cattle prices were roughly offset by higher production caused in-part by slaughter of dairy cows under the Dairy Termination Program. In 1987, fed cattle prices are expected to average \$4 to \$6 above those of 1986 as beef production falls, leaving receipts more than \$1 billion higher than during 1986. However, further gains may be difficult next year as consumer demand remains flat and much of the slack in total meat supplies caused by falling red meat output is replaced by continuing gains in poultry production.

After suffering an 8 percent decline in 1985, poultry and egg producers will likely realize a gain of at least a tenth in 1986 cash receipts. Stronger production coupled with demand-and weather-inspired price increases will probably leave 1986 broiler receipts up nearly a fifth over the \$5.7 billion of 1985. The upward trend in demand for chicken (especially from fast-food restaurants of late) continues to allow both production and prices to rise in concert, giving a double boost to receipts. From 1982 through 1986, broiler receipts have risen nearly 50 percent, second only to turkey (up 55 percent) among major commodities. In 1987, broiler receipts will likely remain near year-earlier levels as rising marketings are offset by reduced farm prices.

Receipts from sales of chicken eggs have accounted for 5 percent of total receipts from livestock and products for the past few years. This year should be no exception as improved prices boost egg receipts 6 to 8 percent above the \$3.3 billion of 1985. In the year ahead, continuing weak demand for eggs plus a small increase in production will help push egg prices down and leave receipts 4 to 6 percent below those of 1986.

A 2-percent decline in the farm price of milk should outweigh a 1-percent year-over-year gain in milk production to leave receipts from marketings of milk slightly below the \$17.8 billion of 1985. All the gain in 1986 output came during the first half, before cuts in the dairy herd (resulting from the Dairy Termination Program) brought production in the second-half below a year-earlier. In 1987, production should remain below that of 1986. This, together with slightly lower average prices resulting from a cut in the support-price, is expected to leave dairy receipts 2 to 4 percent below those of 1986.

Government Payments

Direct Government payments (including cash and certificates) is one of the major components of total federal outlays to the farm sector. 2/ Since 1983, it has also been a major component of gross farm income. In 1984 and 1985, direct payments (including PIK) totaled nearly 5 percent of gross cash income, up from less than 1 percent in 1980 and 2 percent in 1982. However, because of significant increases in deficiency payments, plus the addition of programs such as the Dairy Termination Program, and the Conservation Reserve, direct payments could total nearly 9 percent of gross cash income in 1986. In the year ahead, with the addition of land diversion payments for feed grains, increased conservation reserve rental payments, increased deficiency payment rates, and even stronger program participation, direct payments may exceed 10 percent of gross cash income.

Direct payments (cash and certificates) in 1987 could top \$15 billion after totaling an estimated \$13 billion in 1986. Although cash payments could decline slightly from 1986 levels, the value of certificates issued to satisfy

2/ Federal outlays (mainly disbursed through the CCC) include such items as direct payments for deficiency, diversion, disaster, conservation, and storage, plus net CCC price support loans, dairy price support operations, farm export subsidies, PL 480 and more. Outlays are reported on a fiscal year basis, whereas, direct payments and farm income are on a calendar year.

deficiency, diversion, disaster, and conservation reserve obligations could range from \$6 to \$8 billion. The forecast for 1987 payments could move higher if an estimated \$1 billion in advance 1987 crop deficiency and diversion payments is not received by farmers during calendar 1986. Although the \$1 billion is a fraction of the total potential advance, the short period of time available in calendar 1986 following commencement of the sign-up periods, paper-work delays, and the historical tendency for farmers to contemplate programs before making participation decisions all work against a large volume of advances moving into calendar 1986. Additionally, the large volume of payments already received in 1986 may encourage some farmers to wait until the following tax year to receive the additional income.

The distribution of payments by state in 1986 and 1987 is expected to be similar to 1985. In 1985, the top 10 states received 63 percent of the total with the top state, Texas, receiving 11 percent. Mostly a result of the cotton programs, Texas has been the leading recipient of direct subsidies annually since 1978. The top ten states have received 60-70 percent of all payments during the past few years. Predictably, four of the top ten in 1985 were major producers of feed grains (Iowa, Nebraska, Illinois, and Minnesota) and three were wheat states (North Dakota, Kansas, and Oklahoma).

Production Expenses

In addition to increases in direct payments, significant decreases in farm production expenses have been important in maintaining the incomes of many farmers. With most major expense categories falling in 1986, total farm production expenses are expected to decline about 5 percent, the largest year-to-year decline since 1953. Nominal dollar cash expenses are expected to fall to their lowest level since 1979. The largest percentage drops will likely occur in interest expenses followed by manufactured inputs, seed, and capital consumption. Reductions in the quantities of inputs used and in the prices paid for these inputs have been about equally responsible for the decline in expenses this year.

A decrease of a fifth in fuel and oil expenses caused mainly by lower planted acres and the substantial fall-off in petroleum prices this past spring will likely cut close to \$1.5 billion from the expense bills of farmers in 1986. Although much of this savings likely went to farms idling acreage under the farm programs, all farmers reaped some benefits from the 17 percent cut in fuel prices. The lower energy prices will likely have secondary impacts on farm expenses into 1987 as fertilizer prices fall and the overall inflation rate in the economy is slowed. Fertilizer prices fell 8 percent in 1986 and are forecast to fall a similar amount in 1987. Most of the price fall next year will likely come from nitrogen materials as natural gas prices fall and a large supply of urea remains available. With acres planted off by 4 percent in 1986 and 5 percent or more next year, fertilizer outlays may fall 12 to 14 percent in both 1986 and 1987. This means that by 1987, fertilizer expenses could total \$2 billion lower than in 1985. The decline is important for corn producers since roughly half of all agricultural fertilizer is applied to corn acreage. The second largest user is wheat with just under a sixth of total fertilizer use. Outlays for pesticides likely fell 4 to 6 percent in 1986 and are projected to fall 7 to 9 percent in 1987, largely the result of reduced treated acres in both years.

Farm Production Expenses, 1983-87

Item	:	1983	:	1984	:	1985	:	1986F	:	1987F
	:	-Percent change from a year earlier-								
	:									
Farm origin items	:	6.6		-2.2		-2.6		-2		-2
Manufactured inputs	:	-6.1		3.0		-2.9		-12		-9
Interest charges	:	-1.8		-1.4		-11.5		-14		-3
Repairs, labor, machine	:									
hire	:	-4.2		4.0		0.6		1		1
Other items 1/	:	-1.5		4.2		-3.9		-4		-3
	:									
Total expenses	:	-0.8		1.6		-4.0		-5		-3
	:									
Cash expenses	:	-0.6		2.3		-3.0		-5		-3

F = Forecast 1/ Includes depreciation, taxes, net rent, and others.

Outlays for inputs of farm origin will likely fall 1 to 3 percent in 1986 as higher outlays for purchased livestock are outweighed by reductions in feed and seed expenses. Prices farmers paid for feed and feed mixtures fell 7 percent, seed prices dropped 3 percent as heavily weighted items such as hybrid corn seed fell, and feeder livestock prices (although trending upward throughout the year) fell 1 percent. Purchases of livestock are expected to increase on the strength of rising feeder cattle placements, which had been heavy through the third quarter. In the year ahead, farm origin expenses are forecast to fall 1 to 3 percent as rising purchases of livestock (up 5 to 7 percent) are outweighed by declines in feed expenses (down 4 to 7 percent). Lower grain prices will be responsible for most of the fall in feed expenses, while reduced planted area, especially for feed grains, will be the major factor affecting seed outlays.

Interest expenses, which at their peak in 1982 accounted for nearly 16 percent of total expenses, are expected to fall about a sixth in 1986. Interest costs declined 12 percent in 1985 and have declined annually since the 1982 peak. This is the longest sustained decline since the 1921-38 period. Falling interest rates and declining outstanding debt caused by both principal repayment and lender writeoffs have combined to trim a projected \$2.5 billion from 1986 interest expenses.

Nonreal estate interest will likely fall 15 to 18 percent in 1986 as average debt outstanding falls 8 to 10 percent and the average rate on that outstanding debt declines 7 to 9 percent. In 1987, average debt outstanding will probably fall again (perhaps 4 to 7 percent) outweighing a small rise in the average interest rate on nonreal estate debt. This could leave nonreal estate interest expenses down 2 to 5 percent. Mortgage interest expenses are expected to fall about a tenth in 1986 due about equally to decreasing average debt outstanding and average interest rates. In 1987, continued declines in debt outstanding are forecast to outweigh slightly higher average interest rates, leaving mortgage interest expenses down 1 to 4 percent.

Capital consumption, a noncash expense which includes depreciation and accidental damage, is expected to fall 4 to 7 percent in 1986, continuing the unprecedented downward trend begun in 1983. With another decline projected for 1987, perhaps 2 to 7 percent, this expense item will have fallen about \$4.5 billion since peaking in 1982 at \$23.9 billion. The negative trend in depreciation mainly reflects the steady decline in capital spending by farmers since the 1979 peak.

Hired labor expenses have not reflected the downturn associated with most other expense components. This is largely because roughly 70 percent of hired labor is used by commodity subsectors which are not directly associated with farm programs (eg. livestock, fruits) and their attendant acreage restrictions. In 1985, while total expenses were falling 4 percent, hired labor expenses increased 5 percent. Hired labor is expected to rise another 4 to 6 percent in 1986 due mostly to increased wage rates. A small 1 to 3 percent rise is forecast for 1987 hired labor as higher wage rates outweigh a small reduction in labor hours used.

Income Indicators

Gross cash income will likely fall about 4 percent in 1986, totaling near the \$150 billion average of 1980 to 1985. The \$11 billion decline expected for cash receipts and farm related income will not be offset by rising direct Federal payments. While gross cash income is expected to fall about \$6 billion in 1986, cash expenses are will also likely fall about \$6 billion, leaving net cash income roughly the same as 1985's \$44 billion. In 1982 dollars, net cash income will be about \$1 billion less than during 1985. In 1987, gross cash income is expected to remain near that of 1986, the result of the stabilizing effect of stronger Government payments which should about offset lower crop cash receipts. Since acres planted and input prices are likely to be lower, cash expenses will probably decline, leaving net cash income in the range of \$45 to \$50 billion. Because of the impacts of higher subsidies and lower expenses, net cash income in 1982 dollars could be the highest since 1979 and about the same as the 1971 level.

Net farm income, or income from production, is expected to fall within the \$26 to \$30 billion range for 1986. This is a drop of about \$2 billion from the 1985 level and reflects lower gross farm income caused by reduced crop receipts, smaller nonmoney and farm related income, and a \$2 to \$4 billion drawdown in farmer held crop and livestock inventories. In the year ahead, gross farm income may fall to a range of \$155 to \$159 billion as decreases in cash receipts, nonmoney and farm related income, and another drawdown in crop and livestock inventories, outweighs increased direct payments. However, the projected drop in production expenses will likely be sufficient to raise 1987 net farm income into the \$29 to \$34 billion range.

Regarding other measures of aggregate income performance, returns to operators which measures the return to the operator's management, labor, and equity capital is expected to mirror the pattern of net farm income in 1986 and 1987. Due to the sharp decline in 1986 gross income, returns to operators will likely fall \$1 to \$2 billion from the \$25.7 billion of 1985. In the year ahead, with gross income expected to remain near 1986 levels, the continued decline in both factor and nonfactor payments (expenses) will likely leave operator income \$3 to \$5 billion above that of 1986.

Net cash flow measures the total cash available to the sector in a given year after accounting for new loans (or loan principal repayments) and capital replacement. In 1986, net cash flow could rise somewhat due to continued strong nominal net cash income and reduced capital expenditures. In 1987, cash flow may continue to improve with higher net cash income. The strong cash income will enable the sector to continue paying-down debt and generate sufficient internal cash to finance operations in the coming year.

Farm Income, 1983-87

Item	: 1983	: 1984	: 1985	: 1986F	: 1987F
	Billion dollars				
1. Cash receipts	: 136.5	142.2	142.1	132	130
2. Direct Government payments	: 9.3	8.4	7.7	13	15
3. Other farm related income	: 4.4	4.3	6.4	5	5
4. Gross cash income (1+2+3)	: 150.2	154.9	156.2	150	150
5. Cash expenses	: 113.0	115.6	112.1	106	103
Net cash income (4-5)	: 37.1	39.3	44.0	44	48
Deflated (1982\$) 1/	: 35.7	36.4	39.5	38	40
7. Nonmoney income 2/	: 13.2	13.3	11.5	10	9
8. Inventory change	: -10.9	6.3	-1.1	-3	-3
9. Noncash & household expenses 3/	: 26.4	26.2	24.0	23	22
10. Net farm income (6+7+8-9)	: 13.0	32.7	30.5	28	32
Deflated (1982\$) 1/	: 12.5	30.3	27.3	25	27
11. Off-farm income	: 37.0	37.9	40.8	43	44

F = midpoint of current forecast range. 1/ Deflated by the GNP implicit price deflator, 1982=100. 2/ Includes gross rental value of dwellings and home consumption. 3/ Includes capital consumption, noncash labor benefits, and household expenses.

Income Distributions

Based on distributors derived from the 1985 Farm Cost and Returns Survey, a shifting of net cash income from crop to livestock farms likely occurred in 1986. Crop farms accounted for nearly 61 percent of net cash income in 1985, but with significantly lower cash receipts, they may receive only 53 percent in 1986 and as little as 51 percent in 1987. The largest share of this decline is centered in the cash grain sector, which in 1985 accounted for 23 percent of net cash income. Because rising Government payments and reduced expenses may not overcome the projected 20 percent fall in cash receipts, 1986 cash grain net cash income could fall to 17 percent of total net cash income. Cash grain farms averaged an estimated \$17,400 in 1985, but their 1986 and 1987 forecast averages could be as much as \$3,000 lower.

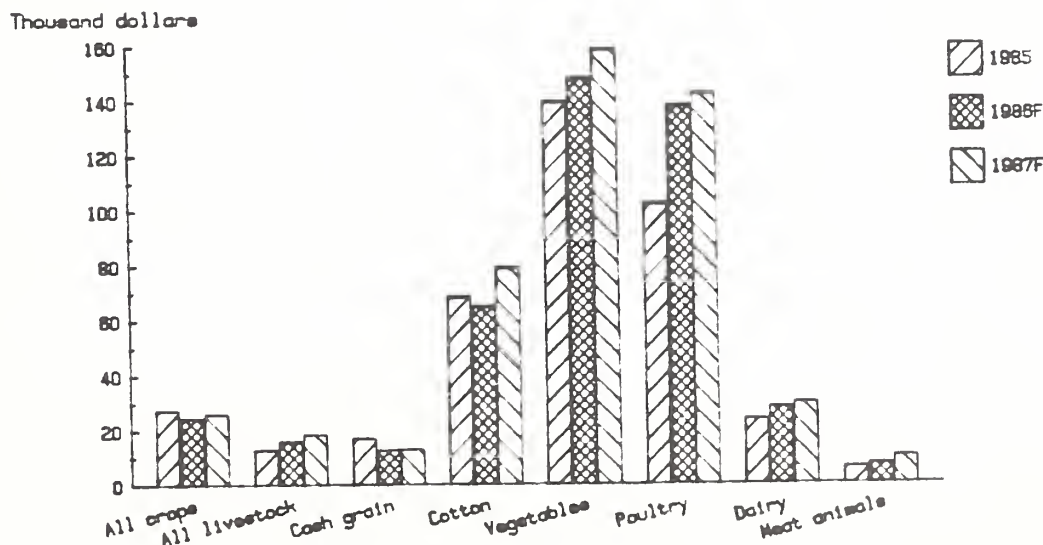
Fruit, vegetable, and horticultural farms, which together comprise 6 percent of farms and 14 percent of cash receipts, received 27 percent of total net

cash income in 1985 and could receive a growing share in 1986 and 1987. These farms, which tend to be large-scale commercial operations selling high-value products, have per-farm averages which are substantially above those of the average crop farm. Vegetable farms realize the greatest per farm net cash income with well over \$100,000. Income per-farm for tobacco farms, which averaged an estimated \$14,100 in 1985, may be cut in half in 1986 due to the severe drought in the southeast and its impact on production and sales revenue.

Although gross income for livestock farms may have remained near the 1985 total, declining input prices, especially for feed and fuel have likely cut expenses and raised net cash income \$3 to \$4 billion from the estimated \$17.3 billion of 1985. In the year ahead, livestock income could rise to near 50 percent of the farm sector's total as receipts improve and expenses continue to fall. Net cash income in the meat animal sub-sector, which totaled an estimated \$5.7 billion in 1985, or 33 percent of total livestock income, could rise in 1986 due to stronger hog receipts and reduced expenses. In 1987, meat animal income may surpass poultry and dairy sector income as cash receipts improve for cattle and hogs and expenses continue to decline. Largely through grain production activities, meat animal farms may receive about \$2 billion in direct Federal payments in 1986 and 1987--more than half the livestock sector's total.

Dairy sector net cash income, which totaled an estimated \$6.2 billion (14 percent of all net cash income) in 1985, may improve in 1986 and 1987 despite lower milk prices and reduced cash receipts. Payments under the Dairy Termination Program and lower production costs will likely boost income. The poultry and egg sector which in 1985 accounted for 2 percent of all farms and 11 percent of all net cash income, may realize the largest income gain of all farm sub-sectors in 1986. A substantial increase in receipts will likely combine with lower expenses to raise income more than fourth above the \$4.9 billion of 1985. Aside from vegetable farms, poultry and egg operations receive the largest per farm income (\$102,400 in 1985). In the year ahead, despite little growth in receipts (except for turkeys), income will probably be maintained near the 1986 level as production expenses again decline.

Net Cash Income Per Farm
By Farm Type. 1985-87



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FARM SECTOR ASSETS, DEBTS, AND EQUITY

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Introduction

No segment of U.S. agriculture has been sheltered from precipitous adjustments that have occurred in the value of assets, level of debt, and consequent changes in equity for the farm sector in the past 15 years. Well documented changes in the sector's balance sheet have included a steep ascent in asset values during the 1970's and early 1980's, an abrupt drop in values since 1981, and a rapid rise in the level of debt usage during the decade from 1972 to 1982. In contrast to changes in asset values, debt reductions have proved sticky on the downside, with debt outstanding being reduced about 6 percent as opposed to a nearly 25 percent fall in asset values since the early 1980's. As a result, owner equity in farm assets has eroded each year since 1981. At the end of 1985, equity in farm assets (excluding operator households) stood at \$579 billion, a level about equal to that of 1978/79 in current dollars and approximately that of the late 1960's and early 1970's in real terms. These adjustments have eroded net worths of farm businesses and, given the close relationship that exists in most cases between the farm business and the farm household, farm families. Through the end of 1985 owners of farm assets had experienced paper losses during the 1980's that eliminated two-fifths of the 1970's gain in value. Those who purchased assets, particularly land, since the late 1970's have probably experienced real capital losses since the current market value is probably less than the purchase price. Operators who made debt-financed asset purchases or improvements since the late 1970's have also encountered severe financial difficulties, as the erosion in asset values has pushed them into more highly leveraged positions.

Adjustments in the farm sector's financial experience, including the drop in asset values, reductions in debt and returns to investments have continued into 1986. Moreover, based on current information we expect that farm asset values will continue to decline, although at a slower pace, in both nominal and real terms in 1987. The current expectation is also that farmers will continue to reduce the level of debt outstanding and that equity in farm assets will continue to erode. The remainder of this paper looks at these projections for 1986 and 1987 in more detail. The first section examines trends in returns and cash flow. The next section provides an assessment of changes that have occurred in the sector's balance sheet during 1986 and a discussion of 1987 forecasts. The last section provides a review of the varied financial experience of individual farmers.

Changes in Returns and Cash Flow

While net cash and farm income have recovered from relatively low levels during the 1977-83 period to more nearly resemble levels earned during 1973-75, real net income remains well below the levels earned during the early and mid-1970's. Real net cash income also trended downward between 1979 and 1984. Since 1984, however, real net cash income has increased modestly, although the level for 1985 remained well below the level earned during the first half of the 1970's.

Table 1. Farm sector income, 1970-87 1/

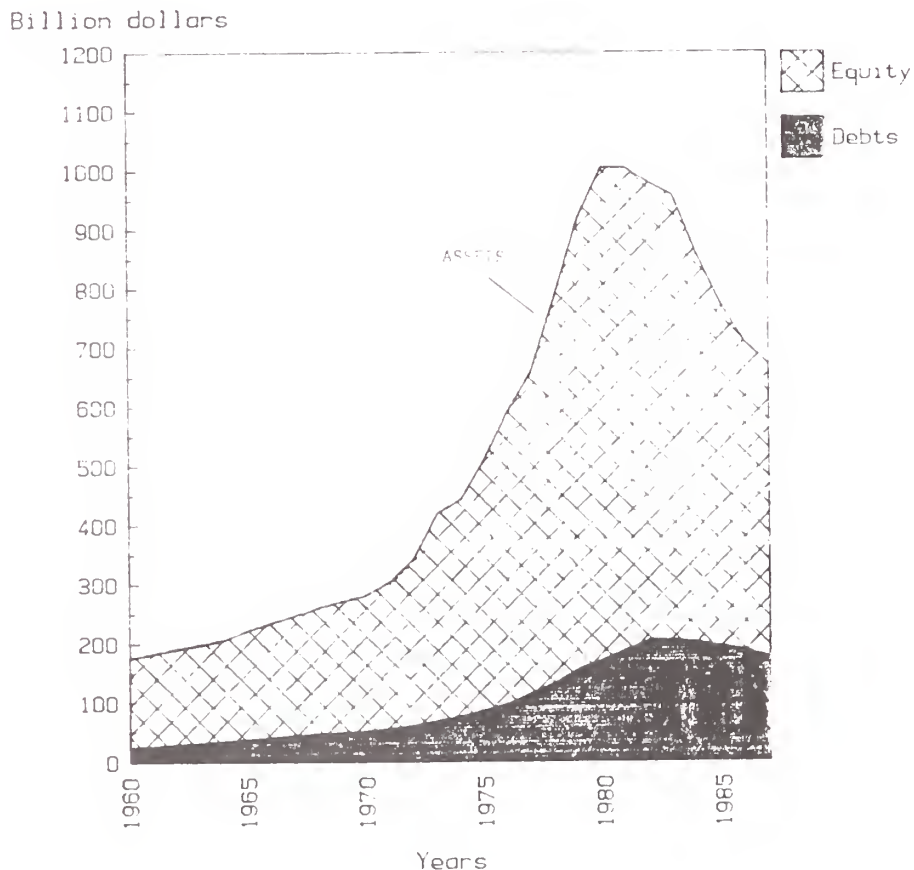
Year	: Cash		: Direct		: Net cash income		: Net farm income	
	: receipts	: payments	: expenses	:	: Nominal	: Deflated	: Nominal	: Deflated
1970	50.5	3.7	44.5	18.4	43.7	14.4	34.2	
1971	52.7	3.1	47.1	18.0	40.6	15.0	33.8	
1972	61.1	4.0	51.7	23.2	49.8	19.5	41.8	
1973	86.9	2.6	64.6	36.0	72.6	34.4	69.4	
1974	92.4	0.5	71.0	34.8	64.5	27.3	50.5	
1975	88.9	0.8	75.0	29.6	49.9	25.5	43.1	
1976	95.4	0.7	82.7	29.9	47.4	20.2	32.0	
1977	96.2	1.8	88.9	27.8	41.4	19.9	29.5	
1978	112.2	3.0	103.2	33.1	45.9	25.2	34.9	
1979	131.5	1.4	123.3	33.4	42.5	27.4	34.9	
1980	139.7	1.3	133.1	34.2	39.9	16.1	18.8	
1981	141.6	1.9	139.4	32.8	34.9	26.9	28.6	
1982	142.6	3.5	140.7	36.8	36.8	22.7	22.7	
1983	136.5	9.3	139.5	37.1	35.7	13.0	12.5	
1984	142.2	8.4	141.7	39.3	36.4	32.7	30.3	
1985	142.1	7.7	136.1	44.0	39.5	30.5	27.3	
1986 <u>2/</u>	132	13	129	44	38	28	25	
1987 <u>2/</u>	130	15	125	48	40	32	27	

1/ Deflated by the GNP implicit price deflator, 1982=100. 2/ Forecast.

Projections for 1986 suggest that, in nominal terms, net farm income will decrease from 1985, while net cash earnings will remain relatively stable. Forecasts for 1987 indicate that net cash income may rise in both nominal and real terms. Real net cash income may exceed the \$40 billion level for the first time since 1979 and could reach levels earned prior to the rapid expansion in real net cash income in 1972. Continued reductions in production expenses and increases in Government payments are primary reasons that real income levels are expected to improve somewhat over their early 1980's levels.

During the 1980's the balance sheet of the farm sector has shown more deterioration than income in the sector. The value of farm assets rose at an average annual percentage increase of about 7 percent through the 1960's and early 1970's, peaking at over \$1 trillion in 1981. Since 1981, farm assets declined by 23 percent to a level of \$771.4 billion through the end of 1985.

Figure 1--Farm Sector Assets, Debt, and Equity-
Excluding Dwellings, 1960-87



Adjusting for inflation that occurred during the 1970's, farm asset values increased from an average of \$638 billion during the 1970-71 period to \$994 billion during 1980-84, an increase of 56 percent; real debt levels rose from \$115 billion to \$187 billion, an increase of 62 percent. Real equity values increased from \$522 billion to \$807 billion. At the end of 1985 real asset values stood at \$766 billion, a drop of 23 percent from the 1980-84 average while debt decreased by 5 percent in real terms. Thus, real equity in 1985 was 27 percent lower than the 1980-84 average value.

Changes that have occurred in the sector's income and balance sheet have altered both the ability to service debt out of current earnings and the returns earned by assets and equity. When measured before payment of interest, and in constant dollars, cash flow dropped from the peak boom years of the 1970's but has remained above pre-boom levels. Before interest payments, both cash flow and returns to farm assets have fluctuated widely, but their levels have not changed much since the beginning of the 1980's and have remained above levels of the 1960's. These data broadly represent the earnings experience of farmers with little or no debt who saw their real returns rise during the boom years of the 1970's and in recent years remain above pre-boom levels.

Reflecting both the rise in debt outstanding and the increase in real interest rates, interest payments rose by nearly 260 percent from the beginning of the 1970's through the early 1980's. Thus, after interest, cash flow has been well below the levels earned from 1972 to 1979 and especially below levels of the 1972 to 1974 boom period. Aggregate return on equity from farm income has also been negative in some years of the 1980's, averaging a negative \$800 million in constant dollars for the 1980-84 period. For 1985, earnings from equity recovered from the low level of 1980-84 to near the level earned from 1975-79 but remained below the level earned during the 1970-71 pre-boom years.

Table 2--Farm Sector Cash Flow

Item	Average for period				Year		
	1970-71	1972-74	1975-79	1980-84	1985	1986F	1987F
	1982 dollars						
Gross cash							
income ^{1/}							
(including net							
CCC loans)	128.9	165.7	157.8	152.2	139.8	131.3	127.2
Less: expenses							
excluding							
interest	75.1	87.4	94.5	90.1	78.2	75.7	72.1
Equals: cash flow:							
before interest							
payments	53.8	78.3	63.3	62.2	61.6	55.6	55.2
Less: interest							
paid	7.6	8.9	12.8	19.6	16.0	13.4	12.7
Equals: cash flow:							
after interest							
payments	46.1	69.3	50.7	42.4	45.6	42.2	42.5

^{1/} Excludes inventory adjustment, gross imputed rental value of farm dwellings, and home consumption.

Relationships between farm production assets and returns to assets, and cash flow and returns to assets to outstanding farm debt are graphed in figures 2 through 5. From 1950 through 1971 both farm assets and income to assets increased at a steady pace, resulting in a rate of return of 2 to 3 percent. Between 1971 and 1973 aggregate income to farm assets not only increased but the growth in returns exceeded the growth in asset values, yielding a return to assets of over 7 percent. After peaking in 1973, income to assets decreased each year until 1977. Asset values continued to rise, yielding a rate of return to assets that fell not only below the level of the early 1970's but also below more traditional pre-boom levels. In 1985, aggregate returns to assets totaled \$28 billion and, given the sector's substantially devalued asset base, the resulting 3.3 percent rate of return exceeded the 3.1 percent return earned on assets in the 1970-71 pre-boom period.

Figure 2--Farm Production Assets

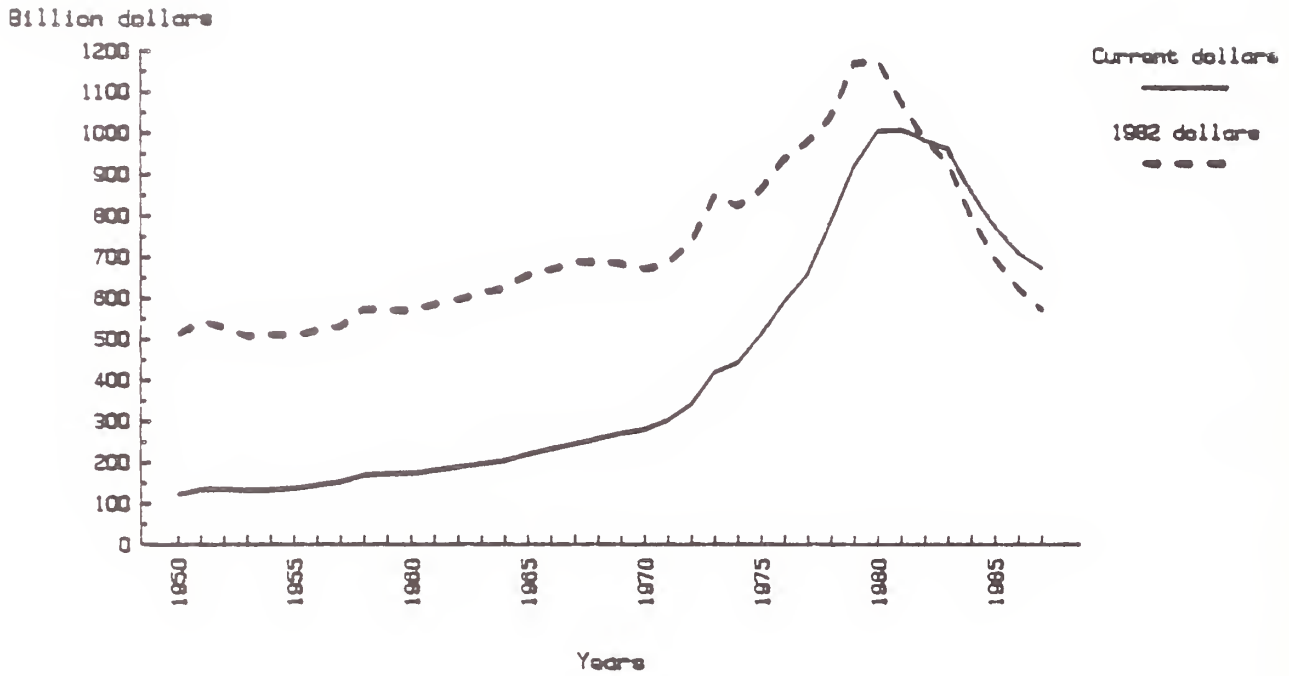


Figure 3--Return to Farm Production Assets

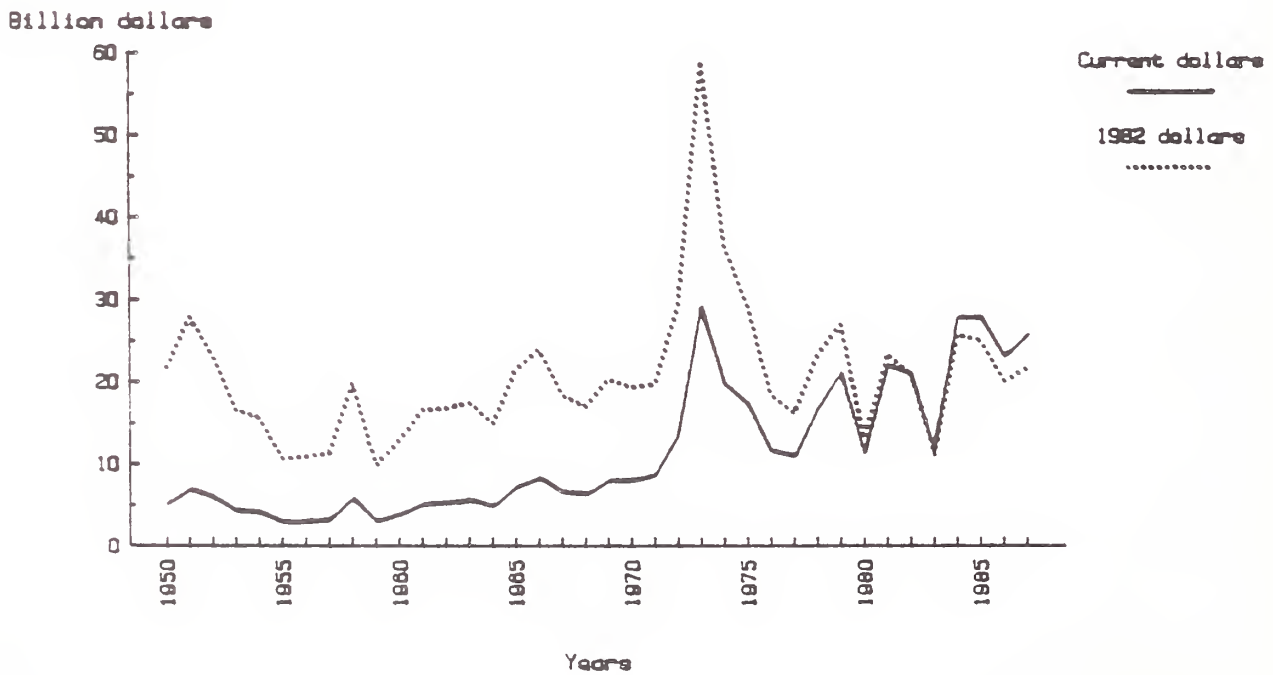


Figure 4—Farm Debt Compared with Income
Flows to Farm Production Assets

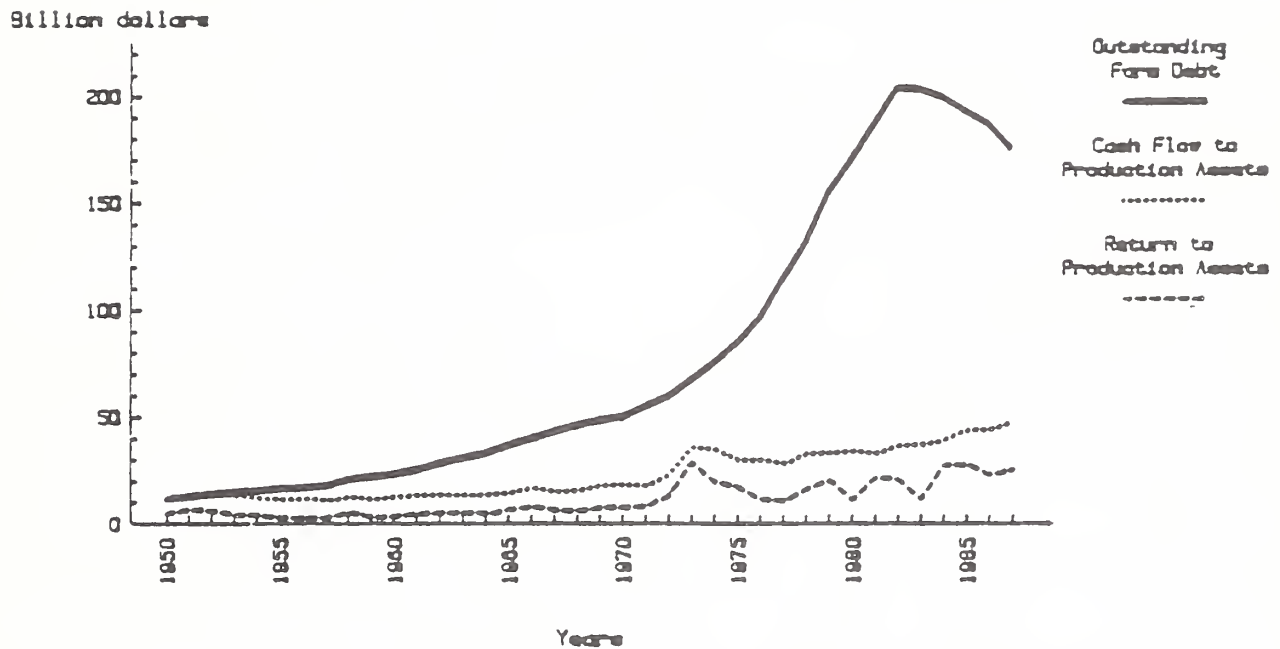
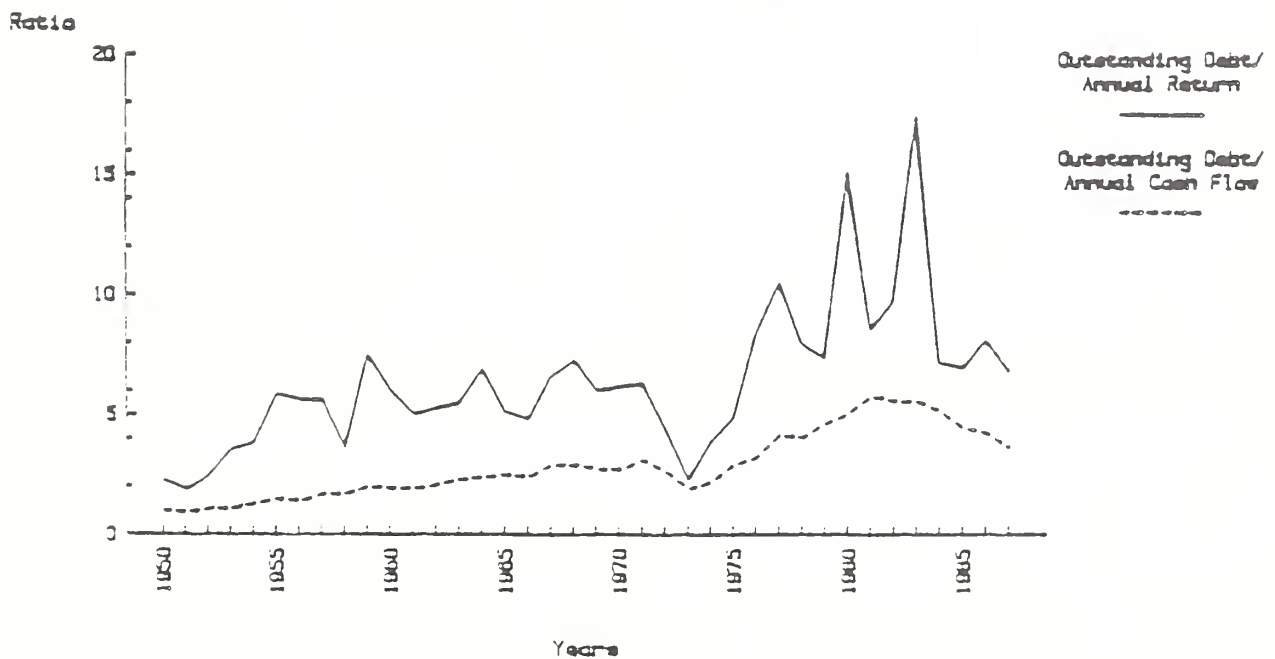


Figure 5—Farm Debt Compared with Income Flows
to Farm Production Assets



While the sector's rate of return to assets has improved, the ratios of farm debt to either annual income to assets or cash flow remain at relatively high levels. Through the 1960's and the early 1970's, debt outstanding generally equaled 2 to 3 times annual cash flow and 5 to 7 times the annual income to production assets. The rapid increase in debt usage that occurred between 1973 and 1981 combined with relatively stable cash flows and fluctuating income to assets resulted in a multiple of debt to cash flow that rose steadily through the 1970's to over 5 in the 1980-84 period and a multiple of debt to returns which exceeded 10 in three different years.

Table 3--Returns to farm production assets and equity

Item	Average for period				Year		
	1970-71	1972-74	1975-79	1980-84	1985	1986F	1987F
----- Billion of 1982 dollars -----							
Gross farm income :							
(excluding :							
operator house- :							
holds) :	132.7	170.3	162.4	152.3	139.9	131.4	127.3
Return to operator:	31.1	50.7	30.1	16.5	23.0	21.6	24.3
Return to farm :							
assets and :							
operators' labor :							
and management :	43.4	67.5	48.9	42.6	45.7	40.9	42.3
Return to farm :							
assets :	19.6	41.6	22.8	18.9	25.0	20.2	21.8
Return to equity :	12.0	32.6	10.2	-0.8	8.9	6.7	9.1
Equity in farm :							
assets (Dec. 31 :							
of previous year):	522.5	583.5	720.8	807.2	588.5	505.9	441.1
Return to equity :							
as percentage of :							
equity (percent) :	2.3	5.6	1.5	-0.1	1.5	1.3	2.1
Total farm assets :							
(Dec. 31 of :							
previous year) :	637.6	705.8	867.6	994.1	766.4	673.7	597.9
Residual income to:							
assets as per- :							
centage of asset :							
value (percent) :	3.1	5.9	2.7	2.0	3.3	3.0	3.7

Reflecting the downturn in debt outstanding which began in 1981 and some improvement in cash flows and returns to assets, debt stood at 4.4 times cash flow and 6.7 times annual returns in 1985. These relationships reinforce the observation that while cash flows and returns before debt service resemble those existing prior to the boom years of the early 1970's, cash flows and returns after debt service remain at relatively low levels even in comparison to the

pre-boom period of the early 1970's. The result has been that farmers with above average levels of debt have been unable, on average, to service their debt from current earnings.

Assets, Debts, Equity--Situation and Outlook for 1987

Prices of capital assets are viewed not only as a function of the expected annual returns provided by the asset, but also of those provided by other assets. ^{1/} Research has also suggested that farm-based returns greatly influence farmland prices. Thus, "aggregate farmland price movements..should be closely tied to factors that affect farm-based returns such as agricultural policies or changes in domestic and world markets. ^{2/} Mirroring the change expected for net farm income, aggregate returns to operators, assets, and equity will likely be below their 1985 levels in 1986 before recovering to near their 1985 level in 1987. Returns to farm assets in 1986 will be slightly higher than the pre-boom 1970-71 average in constant dollars and, perhaps, about 10 percent above the 1970-71 level in 1987. Returns to equity, reflecting the continued large interest commitment of the sector, are projected to remain below their pre-boom levels in constant dollars. This forecast of relatively stagnant real income to assets or equity in 1986 and 1987 suggests that there is little likelihood of a turnaround in asset values in the near term. Moreover, the forecast for income to assets and equity for both 1986 and 1987 is predicated on large Government payments and heavy use of commodity loan programs by grain producers and reductions in expenses brought about by reduced use and stable prices. Any reduction in these sources of income strength that is not offset by an increase in market receipts or other source would likely contribute to further softening of asset values and erosion of the balance sheet.

Total farm asset values are now expected to be around \$707 billion on December 31, 1986, compared with \$771 billion on December 31, 1985. This will be the fifth consecutive annual decline in total asset values. Both real estate and nonreal estate asset values will contribute to the erosion in asset values, but, as in the past four years, the decline in real estate values will be the primary factor behind the total drop in asset values. Nominal real estate values which fell nearly 13 percent in 1985 are forecast to fall another 9 percent in 1986. This projection for 1986 is supported by the small amount of available data from the regional Federal Reserve Banks and other sources which also indicate that land values have continued to decline throughout 1986, although perhaps at a slower pace than in the past 2 or 3 years. Econometric modeling efforts which view land values as a function of the returns generated from land, prospects for longer and intermeditate term investments, and real costs of financing were used to develop the projections for 1986. Results for 1987 also suggest that real estate values could decline by another 7 percent. If this occurs, real estate assets would total about \$474 billion on December 31, 1987, a level near that for 1976-77.

^{1/} For discussion see, Sherrick, Bruce J., Scott H. Irwin, and D. Lynn Forster, "Returns to Capital in Agriculture: A Historical View using Portfolio Theory," Selected Paper, AAEA, July 27-30, 1986, Reno, Nevada. ^{2/} Phipps, Timothy T. "Land Prices and Farm-Based Returns," American Journal of Agricultural Economics, Vol. 66, Number 4, Nov. 1984, pp. 422-429.

Nonreal estate assets are currently expected to total about \$197 billion on December 31, 1986, a drop of about 7 percent from the \$212 billion level of December 31, 1985. This would be the fourth consecutive year that nonreal estate assets have declined, caused by reductions in the number and value of equipment and motor vehicles on farms and reductions in livestock and crop inventory values. In 1986, another decline is expected for machinery and motor vehicle inventories (-4 percent) and livestock values (-2 percent brought about largely by a reduction in the number and value per head of cattle). This would be the seventh straight annual decline in the value of the livestock inventory and the fourth annual decline for the value of machinery and motor vehicles. The largest absolute and percentage decline in nonreal asset values is expected for crops (-22 percent), with about two-thirds of the decline in crop inventory values accounted for by corn and wheat. For 1987, nonreal estate assets are projected to drop by about 1 percent. Crop and machinery inventory values are expected to continue to decline while livestock values may increase. The increase in livestock values are expected due to price improvements since cattle and hog numbers may continue to contract.

Total farm debt outstanding (excluding households) on December 31, 1986, is expected to be down about 3 percent as liabilities either continue to be repaid or written off by lenders and as new loan amounts are reduced. This would be the fourth year of reduction in outstanding farm debt, making this the longest extended downturn in farm debt usage on record. Excluding CCC loans, farm debt could be about 6 percent below 1985.

The small aggregate change in total debt outstanding obscures major adjustments by individual lenders. A surge in CCC loan activity caused by relatively low crop prices compared to CCC loan rates will leave CCC debt up by 30 percent or more at years' end. Farmers Home Administration will be the only other source of nonreal estate lending to have an increased amount of debt outstanding this December. Nonreal estate lending by banks, Production Credit Associations, and individuals and others will continue to shrink. The reduction in nonreal estate debt outstanding probably reflects softening in the demand for loan funds as a result of fewer planted acres of major crops, lower input prices, continued reductions in capital expenditures, and the advancement of loans and payments for 1986 program crops into the planting season. Among lenders for farm real estate the Federal Land Banks will have the largest reduction in outstanding debt. Life insurance companies and individual and others will also have reductions in debt outstanding while Farmers Home and Commercial Banks have increases in real estate debt. Overall, new real estate lending has probably been reduced both due to fewer real estate transactions and lower prices paid for land that is changing ownership.

For 1987, current analysis of prices that farmers may have to pay for inputs, expected use of inputs, and expectations for capital expenditures suggests that nonreal estate debt excluding CCC may fall by another 4 percent, with the largest nongovernment reductions again occurring for Production Credit Associations, individuals and others, and banks. Unlike 1986, it is likely that CCC debt outstanding in 1987 could fall by a fourth to near 1985's level as production is reduced for the program crops and as commodities under loan are used as payment-in-kind to satisfy diversion and deficiency payment amounts. Farmers Home nonreal estate debt outstanding is projected to increase again in 1987. Total real estate debt is projected to decline in 1987 for the fifth consecutive year. The reduction in real estate debt is currently projected to be about 3 percent with

Total net worth in the sector is likely to fall again in 1986 for the sixth consecutive year to a level of \$520 billion, compared with \$579 billion on December 31, 1985. This is the lowest level of owner equity since 1977 in nominal dollars, and in constant dollars the lowest since the 1960's. Equity levels are projected to decline again in 1987 since the drop in asset values will be larger than the reduction in debt outstanding. The debt-to-asset ratio which has been steadily rising the past 6 years is expected to be up again in 1986 to around 26 to 27 percent and to remain near this level for 1987. This compares to a debt-to-asset ratio of 24.9 in 1985 and 18.8 as recently as 1981. The debt-to-net cash income ratio will continue to decline in 1986 and 1987 for the fifth and sixth consecutive years. This may give farmers more breathing room for debt servicing. But the ratios of outstanding debt to annual returns to production assets and cash flow remain at relatively high historical levels. However, both ratios are coming closer to their longer run historic level.

Table 4--Farm Sector Balance Sheet, Excluding Dwellings

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Returns as a percentage of equity value are also expected to improve in 1987 to perhaps the highest level since the early 1970's, but will remain low compared to the early 1970s.

Financial Position of Individual Farmers

The aggregate financial data indicated that most farmers with no debt or relatively low debt are probably not in a financially distressed position. However, aggregate financial measures do not allow ready assessment of earnings and financial performance of individual farm operations. Because farmers differ in the production practices and technologies used on their farms, and make unique financing, marketing, purchasing, and Government program participation decisions, changes in any of these variables will affect individual farms differently. To gauge the financial performance of individual farm businesses, farm level data are needed. Thus, survey data on farm income expenses, assets and debts were used in three alternative approaches to assessing the financial performance of commercial farms. These three approaches included: (1) an assessment of the farm cashflow status and debt position of the farm; (2) cross-classification of farms by return on assets, return on equity, amount of equity, and debt/asset ratios; and (3) an evaluation of financial stress based on the ability of farms to service debt.

Each approach provides a similar view of the extent of financial difficulties currently experienced by commercial agriculture. Regardless of approach, about one-sixth of commercial farms (gross sales of \$40,000 or more) were financially stressed in 1985 (table 5). These operators held approximately one-third of farm debt owed by commercial operators. Similarities exist between approaches with regard to the financial perspective of commercial farm operators across farm types and regions.

Table 5---Commercial farms and debt identified as financially stressed by alternative measures, 1985

Approach	:	Percent of	:	Percent of commercial
	:	commercial farms	:	farm debt
Household earnings and solvency	:	17	:	38
Returns, equity and solvency	:	14	:	26
Debt service and solvency	:	15	:	35

Results from the analysis of financial position using the returns, equity and solvency criteria are used to illustrate the portion of commercial farm operators (sales over \$40,000), and assets and debts held by operators that may be classified as having had serious financial difficulties at the beginning of this year.

Under this classification procedure high debt/asset ratios do not preclude being classified in a good financial position if returns are large enough to service debt. A small percentage of highly leveraged farms generated sufficient returns to service debt. Conversely, some farms with low debt relative to assets were classified as vulnerable due to poor returns. Farms classified as being in a good financial position had a favorable combination of returns and demonstrated ability to sustain equity. Those classified as fair had inadequate returns to sustain equity or to fully service debt over the longer term. Farms currently in the most serious financial position due to inadequate returns and equity cushion were classified as vulnerable. These farmers continued to hold a disproportionately large share of operator debt. As the table also indicates, there was little difference between commercial banks and the Farm Credit system in the proportion of debt owed by borrowers in stressed and vulnerable positions.

The data in table 6 suggest a small improvement in the financial situation of commercial farm operators since 1984, a finding consistent with the aggregate sector returns discussed earlier. Farms were more highly leveraged at the beginning of 1986 but they also had slightly better cash flow and returns. The percent of farms classified as being in a good financial position increased from 70 to 74 percent. Farms classified as vulnerable decreased slightly from 10 percent in 1984 to 9 percent in 1985. As the aggregate data discussed earlier implied, however, the higher the operator's debt to asset ratio the more likely that he would encounter financial difficulties. Amongly highly leveraged operators, a substantial proportion were operating with returns large enough to avoid the stressed and vulnerable classes. In 1985, this result was primarily due to the lower expenses and higher payments and loans which helped boost cash flow.

Table 6--Distribution of commercial farm operators, assets, and debts by relative debt and financial position 1/

Financial position	Debt/asset ratio (percent)								Percentage of total	
	Under 10		11 to 40		41 to 70		Over 70		of total	
Percentage Distribution of Operators										
	1984	1985	1984	1985	1984	1985	1984	1985	1984	1985
Good	29	29	26	25	11	13	5	7	70	74
Fair	5	5	4	3	2	1	2	3	13	13
Stressed	1	*	3	3	2	1	1	1	7	5
Vulnerable	*	*	2	1	5	3	4	3	10	9
All <u>2/</u>	35	34	35	32	20	19	12	14	100	100

* = Less than 0.5 percent.

1/ Classification scheme and 1984 distribution are from: Melichar, Emil, "Financial Experience and Agricultural Banking Experience," Statement before the Subcommittee on Economic Stabilization of the Committee on Banking, Finance, and Urban Affairs, U.S. House of Representatives, October 23, 1985. Data for the table were obtained from the 1984 and 1985 Farm Costs and Returns Surveys.

2/ Totals may not add due to rounding.

Farmers classified as being in good financial condition owned 66 percent of the operator owned assets of commercial sized farms and owed 57 percent of the debt of these operators. At the other end of the financial spectrum, the 9 percent of commercial farms classified as vulnerable owned 8 percent of the assets and owed 23 percent of the debt. Thus farmers classified as vulnerable held a disproportionately large share of operator debt. As the data in table 7 also indicated, there appears to be little difference between commercial banks and the Farm Credit System in the proportion of debt owed by borrowers in stressed and vulnerable positions.

Table 7. Percentage distribution of commercial farm operators, their assets and debts, and debt owed to lenders, by financial position, 1984 and 1985 1/

Year	Operators	Assets	Debt	Debt owed to --			
				Banks	Farm Credit System	Farmers Home Admin.	Other lenders
<u>Financial position good</u>							
1984	70	65	51	47	53	39	NA
1985	74	66	57	57	58	46	58
<u>Financial position fair</u>							
1984	13	18	16	15	15	18	NA
1985	13	21	18	16	17	22	20
<u>Financial position stressed</u>							
1984	7	7	10	13	12	12	NA
1985	5	5	8	9	8	8	7
<u>Financial position vulnerable</u>							
1984	10	10	23	25	20	31	NA
1985	9	8	18	19	17	24	16

NA - Comparable data not available in 1984.

1/ Classification scheme same as shown in table 6.

2/ Excludes debt owed to the Commodity Credit Corporation.

Figure 6—Distribution of Commercial Farms by Region and Financial Condition, 1985

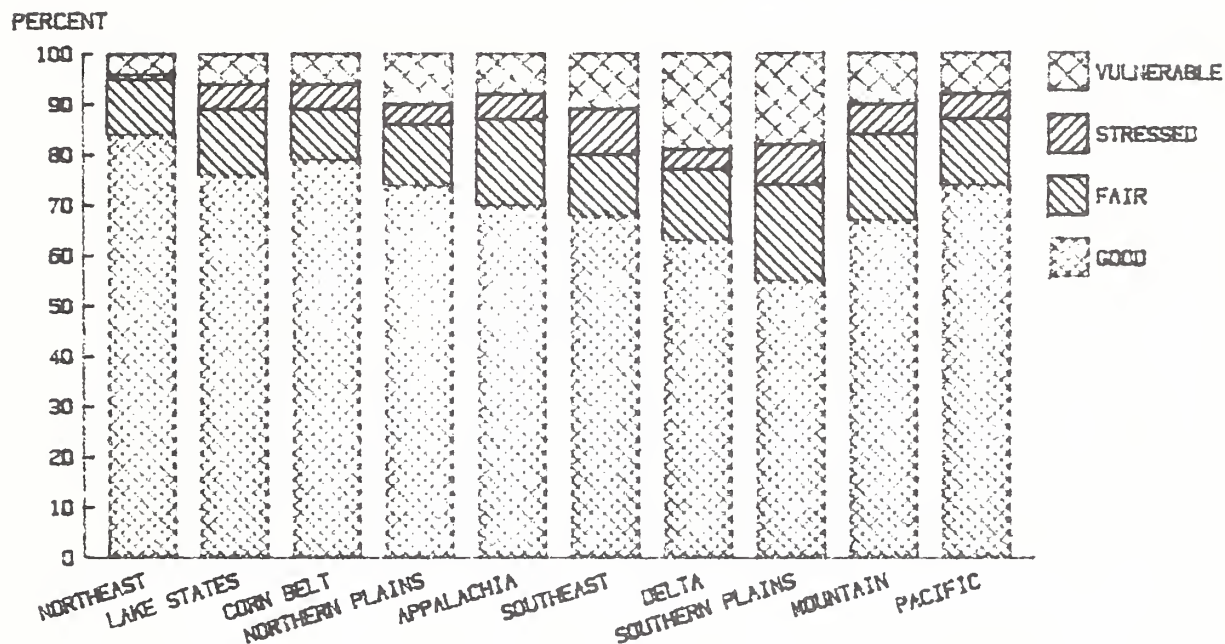
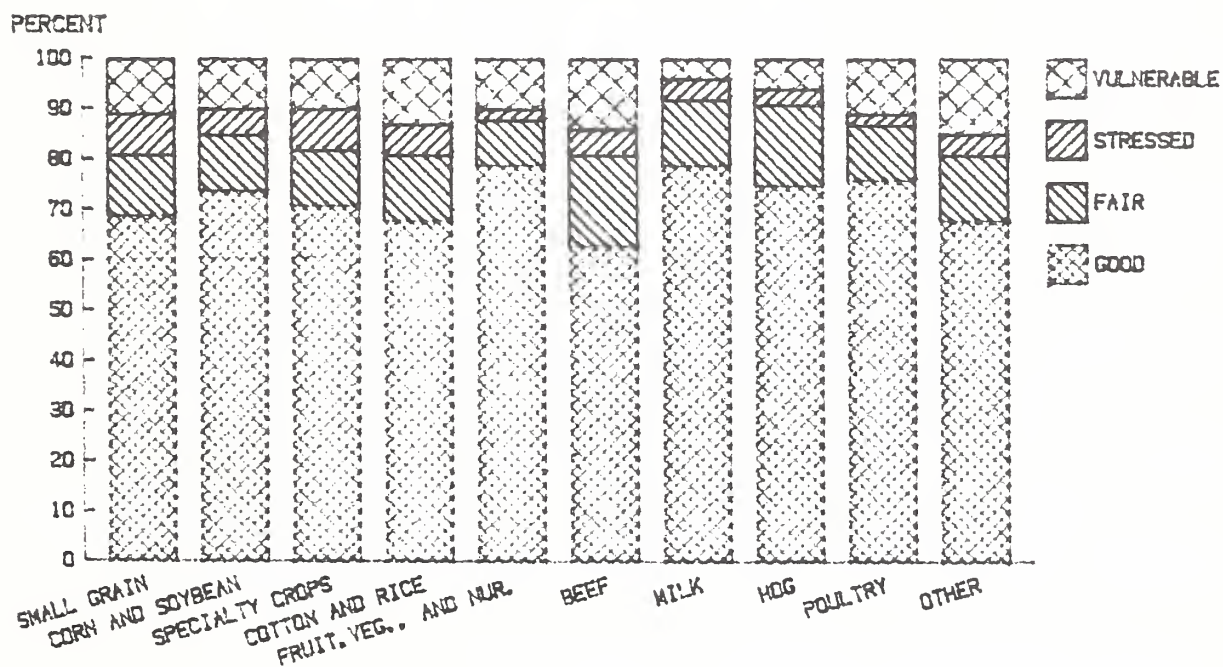


Figure 7—Distribution of Commercial Farms by Major Enterprise and Financial Condition, 1985



ANNUAL AGRICULTURAL OUTLOOK CONFERENCE

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Charts

RELATIONSHIPS AMONG FARM INCOME, ASSETS, AND DEBT

Emanuel Melichar

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Division of Research and Statistics
Board of Governors of the Federal Reserve System

Presented at the

Agricultural Outlook Conference
U.S. Department of Agriculture
Washington, D.C.
December 4, 1986

These charts show income data, balance sheet data, and analytical ratios.

The income data, income ratios, and interest rates are annual averages and are plotted at the midpoint of the year. The last year plotted is 1985.

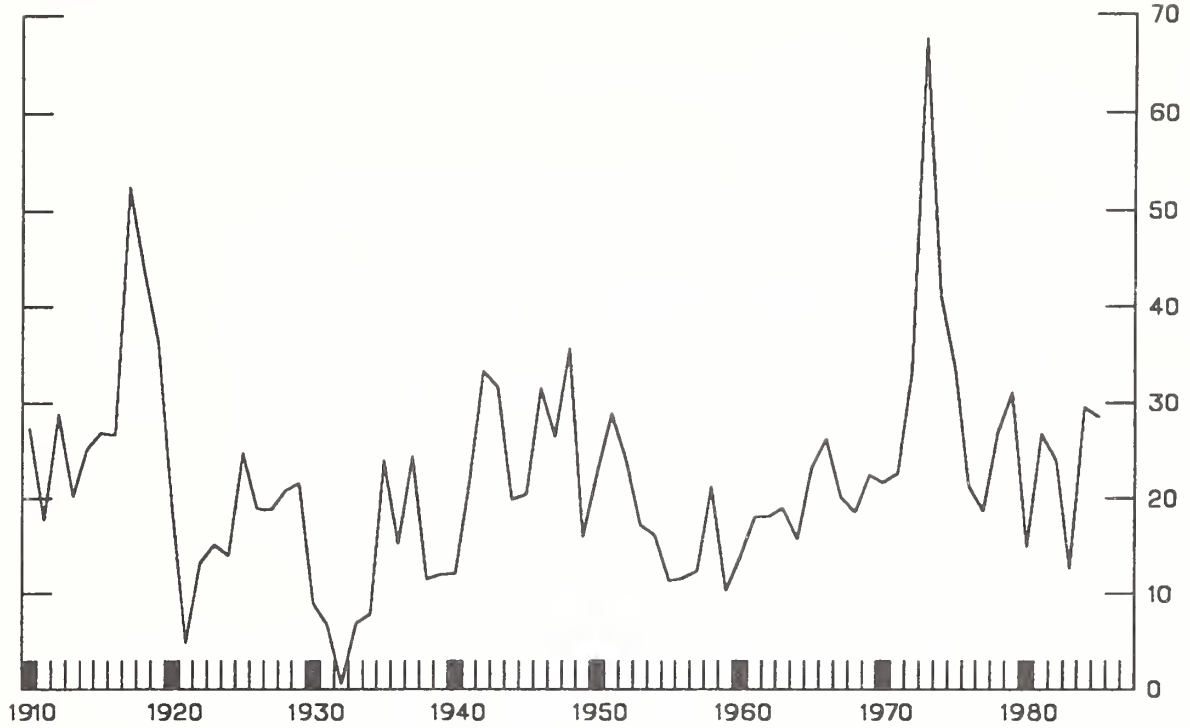
The balance sheet data and ratios are year-end data, plotted at the end of the year. The last data plotted are for December 31, 1985.

The series shown are either published in or are calculated from data published quarterly in Agricultural Finance Databook, Statistical Release E.15, Board of Governors of the Federal Reserve System. To subscribe, contact:

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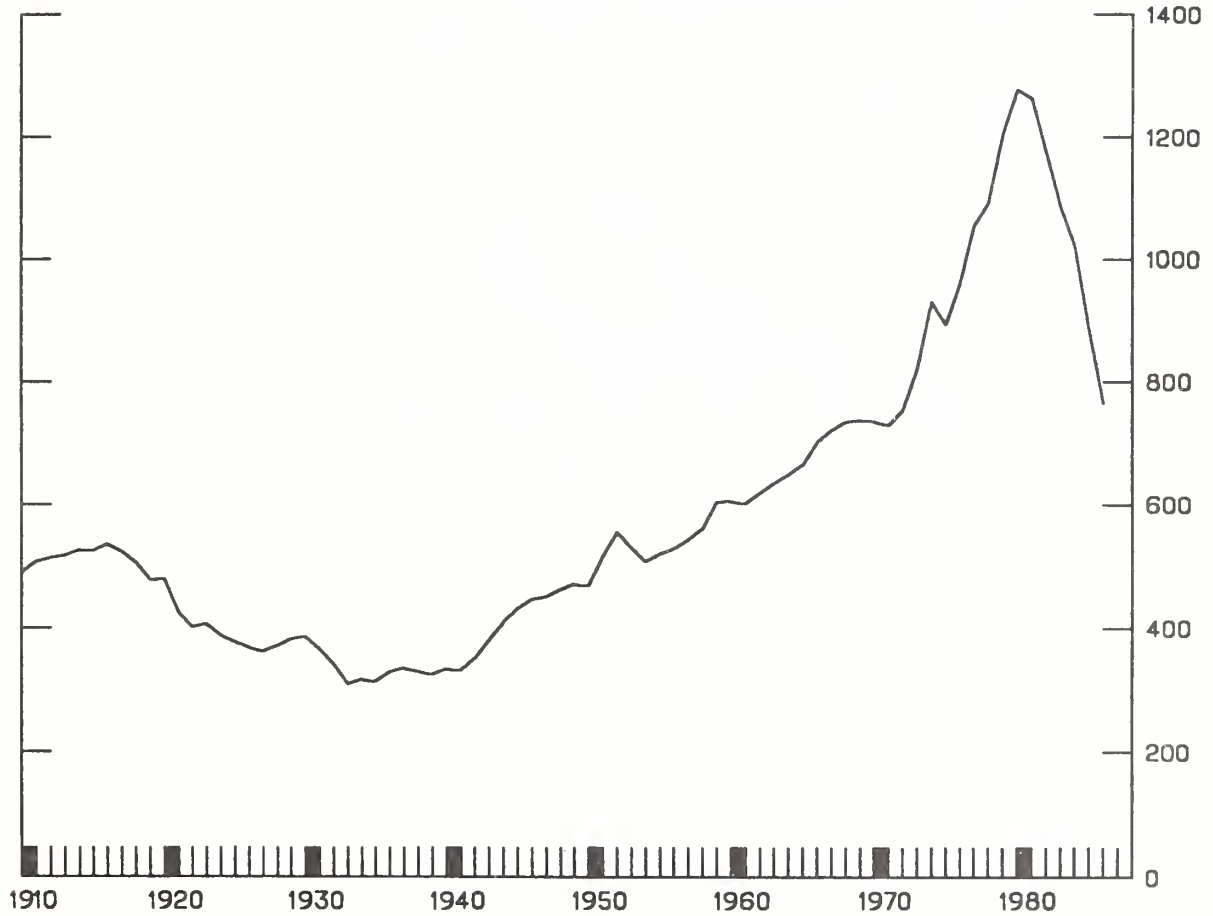
INCOME RETURN TO ASSETS

BILLIONS OF 1988 DOLLARS



ASSETS

BILLIONS OF 1988 DOLLARS



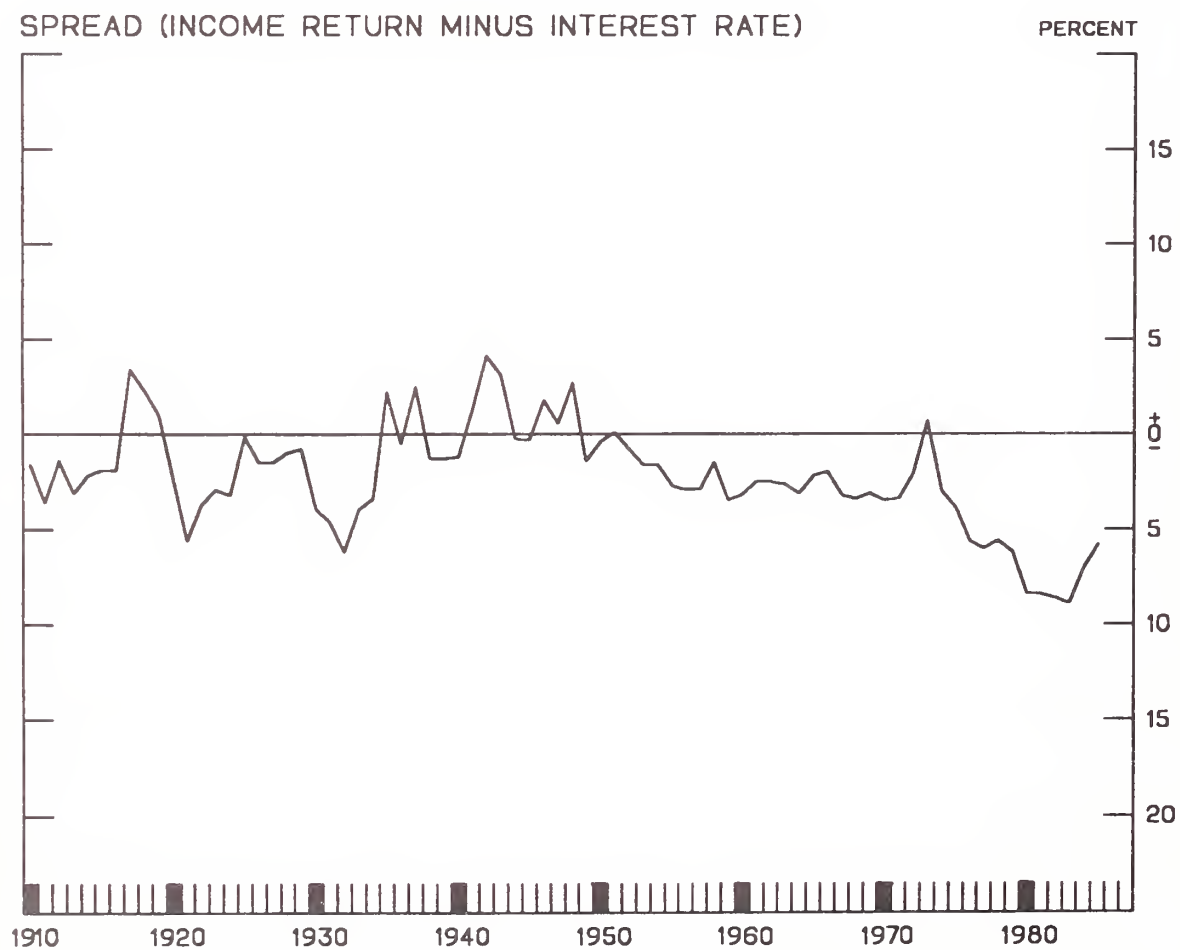
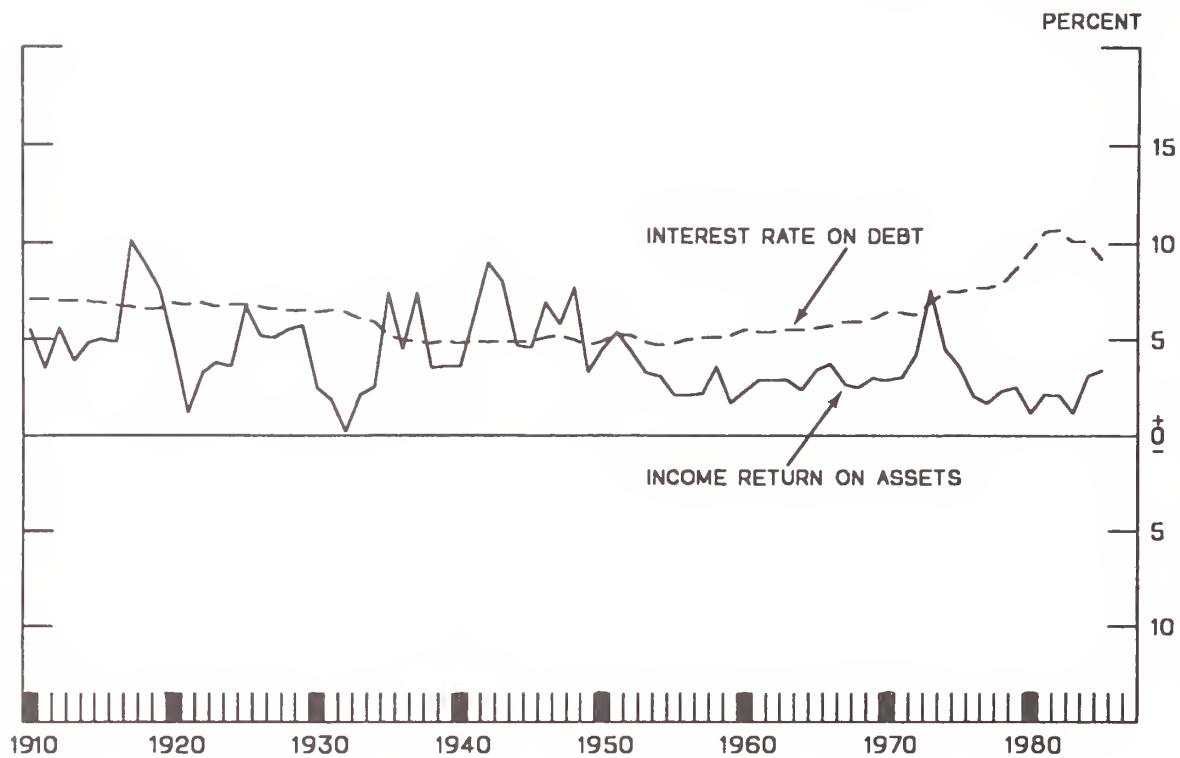


CHART 3

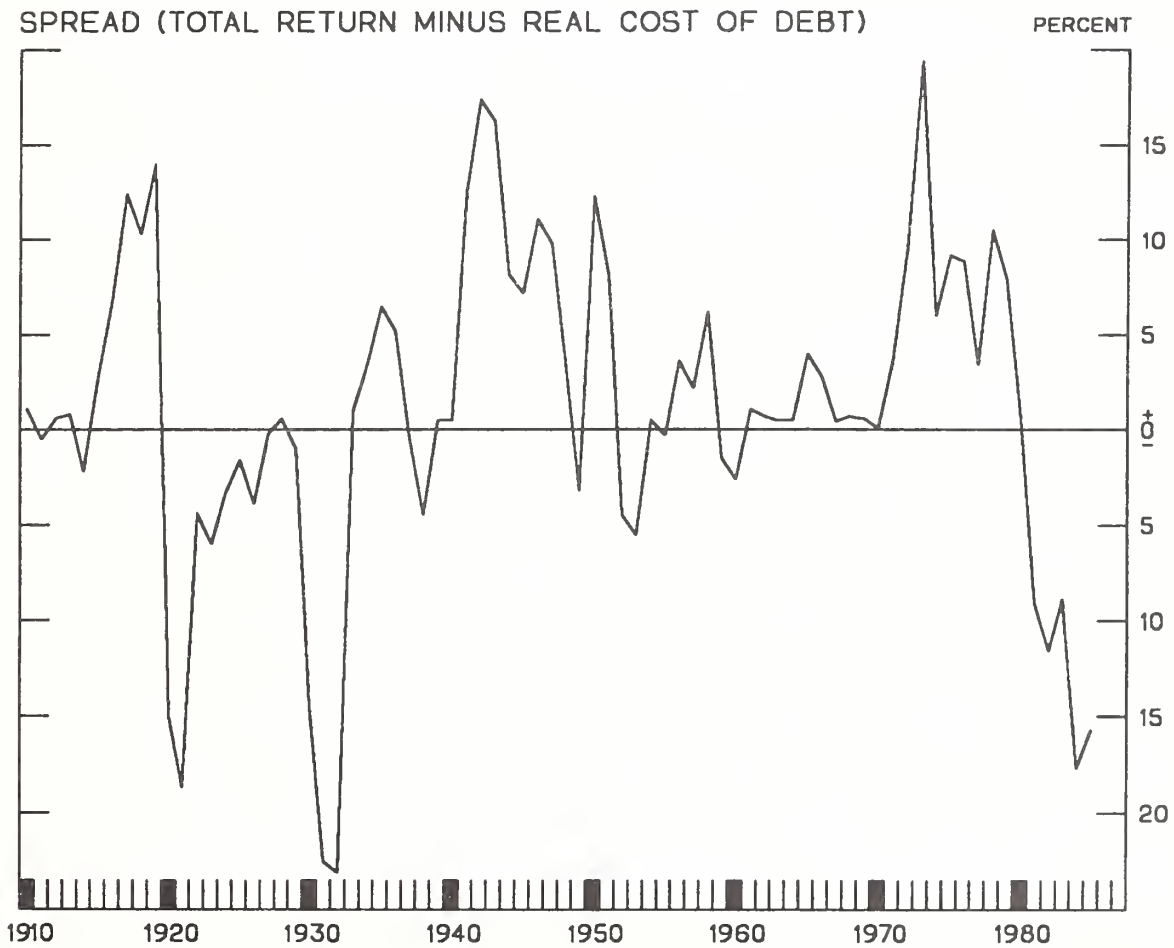
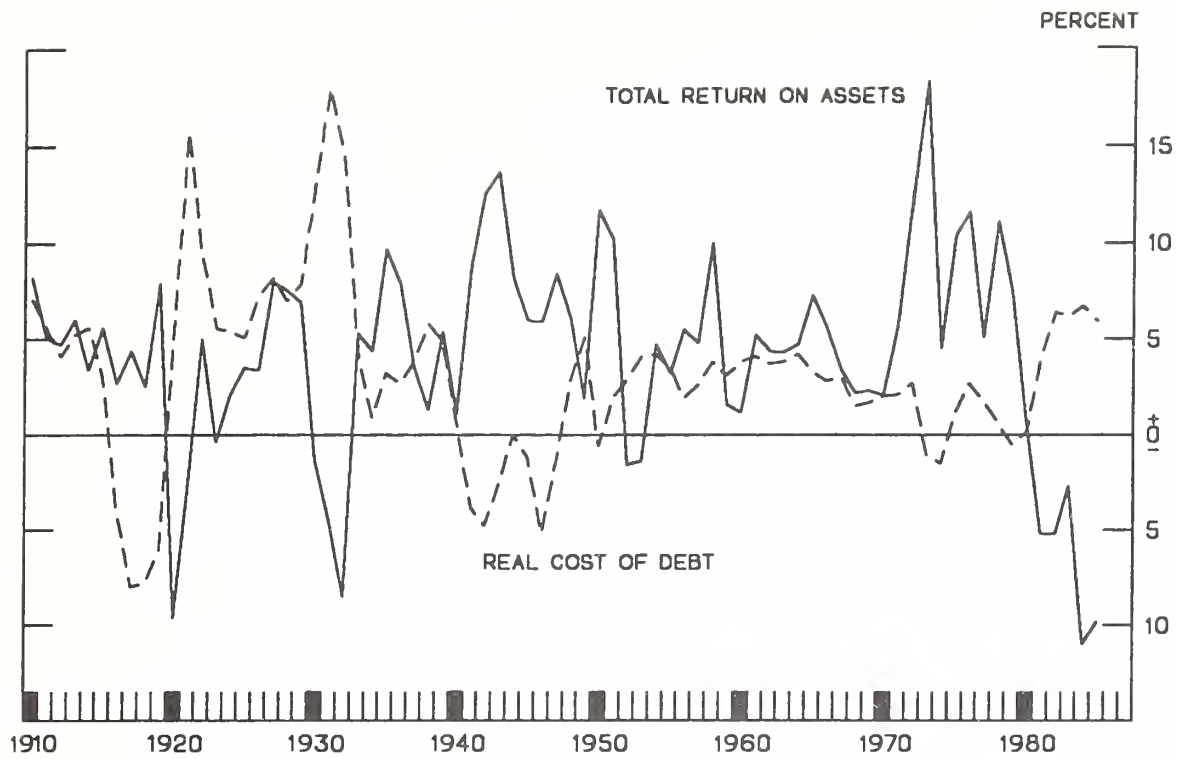
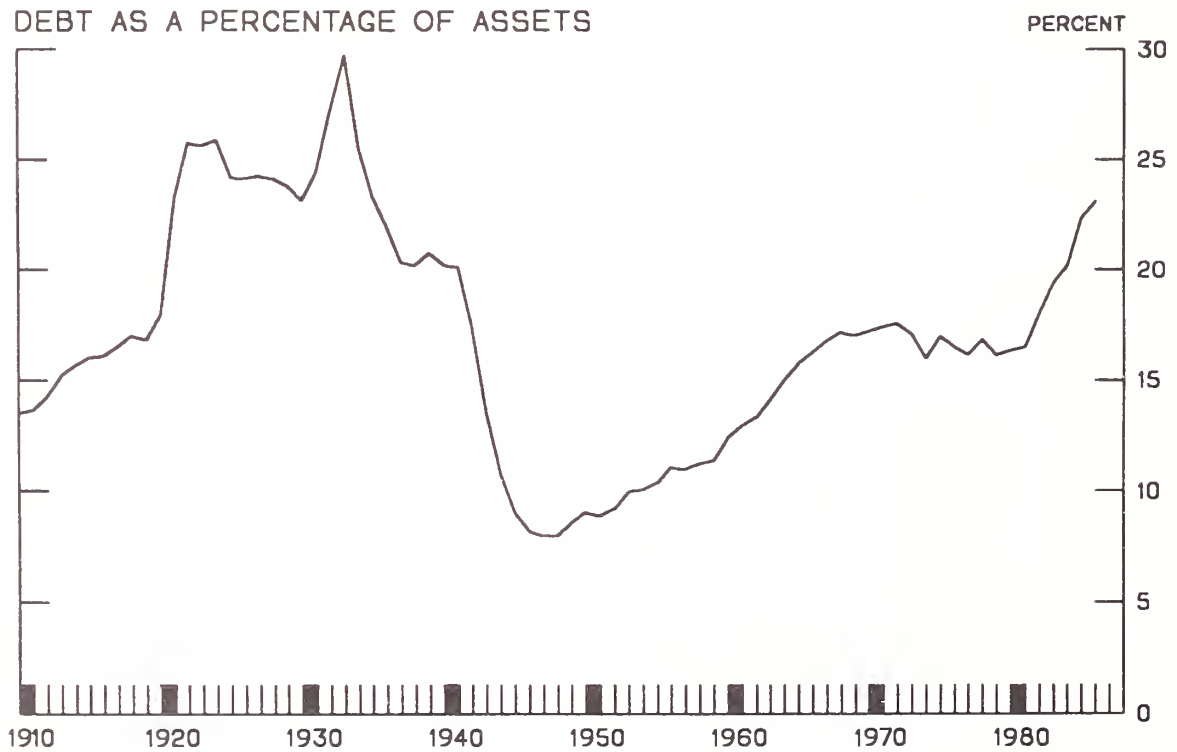
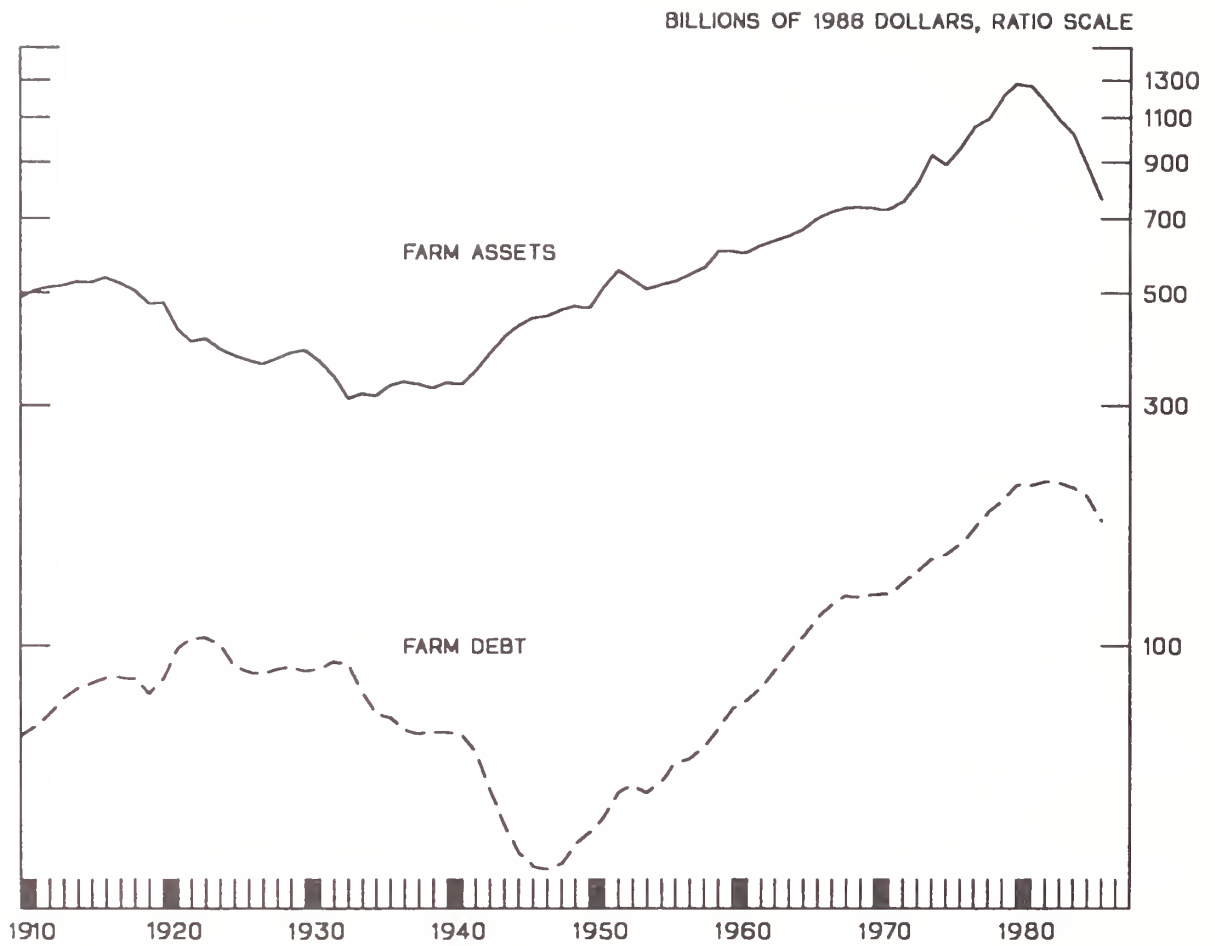


CHART 4



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United States Department of Agriculture
Washington, D.C.



Outlook '87, Session # 29

Thursday, December 4, 1986

OUTLOOK FOR FARM CREDIT

Vance L. Clark, Administrator
Farmers Home Administration

I am delighted to join with my associates from the Farm Credit System and the Independent Bankers this morning as we quickly brief you on the outlook for, and the availability of, credit for our American farmers in the coming year. After listening to the economic gurus, who preceded us as they foretold what the future might hold for our farmers next year, it is obvious that we who are to do the financing, face our own unique challenges of risk management. Are those of us in Agriculture finance prepared to once again fund the American farmers in their quest for profits, slim as they might be, and to again back so many of them as they fight for one more year of survival? We from the Farmers Home Administration would answer "you bet" -- but only for those who have that chance of making it. Yes, we will -- but in a different way, with fewer direct dollars than we did in prior years, and a great deal more, through our guaranteed loan program -- a change of direction started a few years ago, through a financial back up program that we really got serious about in 1986.

Historically, our "last resort lenders" role at Farmers Home has been one of reaction to the mandates of Congress as it added layer upon layer of new loan and grant programs in a never-ending attempt to salvage every American farmer, good or bad, who expressed a desire to pursue an individual dream of tilling

the soil. In my view, we at Farmers Home have been forced to loan too much, to too many, for too long. We, as with many of our lending partners in other sectors of agriculture finance, are now paying for our liberal sins of the past. With problem loans inundating us, we must play, must play, a more prudent role as we continue to finance our borrowers by making more sound credit decisions than we have ever done before. That means we will perhaps be saying "no" more often than before, especially on a direct basis at Farmers Home, and "yes" more often than before as we go forward with our guaranteed loan program, working hand in hand with the ag bankers across the Nation and with the Cooperative Farm Credit System. There is, I believe, developing a real "esprit de corps" among those of us charged with the responsibilities of financing American agriculture -- realizing, more than ever before, that one segment cannot do it alone -- but rather, that each of us must carry part of the load. That cooperative spirit is I think important - and as it builds - the American farmer will be the real beneficiary as he plans for the future and as he makes his own hard decisions for profit and survival.

We at FmHA will continue our role as lender of last resort but will do that by providing -- through our guaranteed program -- that extra boost needed by many of our farmers to obtain operating credit. Unfortunately, and I think unwisely, our historic role in providing credit to the American farmer has been a growing one, in our attempt to provide direct Loan assistance to those who came to our Loan windows. certainly the pressures of congress played a key part in what we were all about. In 1981 we made direct operating and ownership loans totalling \$1.7 billion; this level continued to rise growing almost 50% to \$2.6 billion In '86. Yet, an important step was taken in 1984, when our guaranteed farm loans totaled \$400 million -- almost six times the

\$70 million guaranteed the year before. The 1985, guaranteed total rose to \$1.1 billion, and last year it was whopping \$1.6 billion.

Our change in course, is now firmly charted, and Congress, through its allocation of funding in the 1985 Food Security Act, took an important step in the transition from direct to guaranteed loans. We go into the 1987 farm season with almost \$2.5 billion in guaranteed loan authority with the real emphasis on short term operating credit and with less authority for long term real estate financing.

With the farm economy in the shape it is today, logic would say that it is hard to make a case for the Government to continue to finance some many farmers through long term 40 year real estate loans backed by the taxpayers. we will be there, however, for the truly desperate, hardship applicants who need long term real estate loan assistance, for those who need our helping hand and for those who have the experience, education and training, and who demonstrate the skills necessary in managing an agricultural enterprise in today's tough, competitive world -- that is, people with those attributes who still cannot find a willing commercial Ag lender. We expect that number to be small, however, and we do not foresee Farmers Home as a main source of farm real estate financing in the years ahead. For the 1987 fiscal year, Congress has appropriated \$400 million -- \$75 million in direct loans and \$325 million in guarantees for farm ownership loans. That is the most modest amount in a decade, and reflects a course correction in that program, which in one past year ran to almost \$1 billion. Real estate credit more properly should be supplied by the institutions represented by my colleagues on this panel and again soon I would hope the insurance companies as well even though they do

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not have access to our guarantees. We will gladly work with the ag banks and the land banks -- to the extent of our guarantee authority -- in providing limited 1987 long term farm real estate assistance.

Of more immediate concern to all of us I'm sure - is the availability of operating credit to the farmer who is faced with putting in a crop this coming season. Will there be enough credit to go around? From where I sit, the answer is yes. For operating purposes in 1987, Farmers Home has almost \$3.6 billion available. That is what we had for 1986, and it was enough to go around. Our transition away from direct lending continues, with \$2.17 billion slated for guarantees and \$1.43 billion for direct loans. In 1986, we began the year with total direct and guaranteed amounts of about the same size.

Our 1987 loan-making capabilities will again be backed up by the interest buy-down program and our own creation in Farmers Home, "Operation Assist." Last year, the first of three on the buy-down schedule, we booked about 10 percent of our guaranteed loans as interest buy-downs. That is, we matched a corresponding reduction in interest by the outside lender, up to 2 percentage points, and then turned our matching portion over to that lender. We paid out for 1986 almost \$10 million in interest subsidies on loans totaling \$170 million. We have ample funding for that program next year, and stand ready to cooperate with all those lenders who are like-minded. we have made some technical corrections to our regulations since first this buy down program was launched - and surely 1987 will see greater utilization of this important financing tool. If it takes an interest reduction to make an operation cash flow - we're going to be there to help!

"Operation Assist" was created in 1986 in an attempt to make sure no eligible farmer was denied an opportunity to obtain operating funds, even if his FmHA County Office may have exhausted its direct loan funding ability. In the counties where that might have happened, our County Supervisor was directed to personally escort the farmer -- with all the necessary guarantee paperwork in hand -- to the bank or PCA to seek a guaranteed loan hand hold him if you will. By the end of the fiscal year, we had almost 550 such loans recorded, for a total of some \$43 million. Now that we have established that loans can be obtained in this "pick and shovel" manner, a proven workable alternative - we plan to expand the scope of "Operation Assist" in 1987. I'll be the first to admit that it takes a great deal of extra effort on the part of our field staff to do this, for in too many cases it is a "hard sell", but we will continue in our efforts to make to work!

As we go into 1987, the Farmers Home Administration will be there, once again, playing our traditional role of "lender of last resort" -- but most certainly not the lender of "only resort" in the past - in too many parts of the country - we were the only game in town. we cannot continue to be that only player. We stand ready to guarantee loans that my colleagues here -- the commercial and cooperative lenders -- make to farmers who are not quite strong enough financially, standing alone, yet who otherwise are sound operators.

As I see it, we at Farmers Home have two main responsibilities: our mission in life is, one, to provide credit to eligible farmers unable to obtain commercial credit elsewhere, and, two, to assure the taxpayers of America that we are responsible stewards of their trust. That means we will practice prudent and reasoned lending. We are very much aware of the Nation's budget

and deficit problems, and that, within that framework, we can still provide an essential service to rural America.

In summary, I see adequate credit for agriculture. Most of it to be supplied -- as well it should be -- by the traditional private commercial lenders. Farmers Home will continue to be there to lend that additional helping hand.

I cannot say, however, that we will commit financial assistance to every farmer who applies, but can say that every good viable farmer should be able to expect financing and that We at the Farmers Home Administration through our 2,300 field offices will do our utmost to see that that happens.

ANNUAL AGRICULTURAL OUTLOOK CONFERENCE

United States Department of Agriculture
Washington, D.C.



Outlook '87, Session #29

For Release: Thursday, December 4, 1986

FARM CREDIT SYSTEM PERSPECTIVE

Gene L. Swackhamer
President of the Farm Credit Banks of Baltimore

The Farm Credit System has been buffeted by an unrelenting barrage of problems and challenges as it attempts to deal with delinquent farm loans. The past two years have not been fun for most managers; yet, an impressive resiliency is developing among loan officers and staff. It is a resolve to adapt to do the job. Financial stress has taken a toll on both borrowers and creditors and the race to recovery is still undecided for many. Before going further, however, it seems appropriate to examine some facts to keep the analysis objective.

BACKGROUND

Table I presents selected financial data for the consolidated Farm Credit System (FCS) from December 31, 1984 through September 30, 1986 - a period of 21 months. There are several stories in these numbers. Net loans outstanding have declined steadily reflecting debt paydown and the emergence and growth of nonperforming loans classified as nonaccrual, other high risk loans and acquired property. At September 30, 1986, these categories represented \$13.8 billion or 19% of total assets outstanding. The magnitude of that non-earning drain coupled with increased build up in loss reserves has eroded surplus to \$1.9 billion at September 30, a loss of \$4.3 billion of capital since December 31, 1984.

Realizing that these numbers may lack comparative perspective, Table II contains some ratios that measure exposure and risk bearing capacity. With high risk credit (nonaccrual and other high risk loans) exceeding total capital by 2:1 and non-earning loans (nonaccrual) and acquired property exceeding capital by 1.4:1, it is not difficult to understand why Congress passed the 1985 Farm Credit Act to reassure investors and provide a mechanism for the FCS to borrow from the Treasury, and why Congress passed the 1986 Farm Credit Act to permit long-term amortization of losses occurring through 1988. Time and improved agricultural profitability are essential for a successful workout of these problems.

THE STRATEGIC PLAN

As a specialized financial intermediary for the agricultural sector with only limited options for loan and investment diversification to reduce risk, the FCS has evolved a strategic business plan to contain, manage, and solve the problems of distressed credit. Some of the key provisions of this plan are:

1. Position the Farm Credit System Capital Corporation to manage resource utilization within the FCS.
2. Implement asset/liability management and marginal cost pricing to replace average cost pricing.
3. Establish differential pricing with interest rates determined on the basis of competition, risk incurred and the cost of delivery.
4. Implement structural and organizational changes to adapt to the declining agricultural credit market.
5. Restructure nonaccrual loans and move acquired properties to reduce the non-earning asset burden.

Each of the above points represent a major change in operations. The Farm Credit System Capital Corporation, organized on April 11, 1986, exists to redeploy financial resources from strong banks and associations to weak ones. Each of its actions confronts the FCS with the blunt reality that operationally the System is a single entity (assets protected by loss sharing; debt protected by joint and several liability; net worth protected by capital assessment); yet, organizationally and emotionally it is a federation of autonomous businesses with a common charter - the Farm Credit Act of 1971.

Average cost pricing worked well under reasonably stable interest rates before financial reform and deregulation, but could not cope with the volatility of the last seven years in financial markets. The transition to asset/liability management now under way would be exceedingly difficult for financial organizations under "normal" conditions; it is taxing under present conditions. Yet, it is necessary to permit marginal costs, differential pricing. The downsizing of agriculture to better bring production in balance with demand is affecting all agribusiness suppliers including creditors.

The FCS has made many organizational and operational changes since December 31, 1984 with all district banks now having some joint management, seven districts with a majority of offices in district-wide associations, and two others in the process of deciding on district-wide associations. These changes have helped eliminate redundant functions, have strengthened capital bases and have pooled reserves; yet, more will be needed to achieve maximum efficiency in the delivery of products and services.

Finally, of the five strategies mentioned, a major effort is under way to restructure nonaccrual loans if compromise of interest and principal results in a lower loss and cost than foreclosure. Emotionally, this too is a bitter pill for good borrowers since it seems to reward failure at the cost to borrowers who have sacrificed to keep loans current. It must be presented strictly as a least cost business decision to return loans to an accruing basis which will inure to the benefit of all borrowers and the business in the long-run.

Will this strategic plan succeed? Yes, I think that it will if collateral values (primarily land) do not deteriorate much further and if agricultural

businesses can reduce operating losses. I realize that these are big "IFs", but are not unreasonable assumptions.

ACTION PLANS

To achieve the desired strategic direction, the Farm Credit System has implemented several action plans. I will list only a few of the key ones.

1. Adopted uniform credit standards under policy direction of the Farm Credit Corporation of America (FCCA).
2. Instituted a model pricing plan to insure competitive pricing above minimum base spreads.
3. Instituted uniform information standards for credit and financial reporting under General Accepted Accounting Practices including loss reserve accumulations.
4. Established liquidity and investment standards through operations of the Farm Credit System Funding Corporation.
5. Adopted standard forecasting models for better system financial and operational planning.
6. Executed assistance agreements between the Capital Corporation and six Federal Land Banks to provide financial resources to avoid stock impairment.
7. Adopted a uniform loan restructuring policy for all FCS entities.
8. Adopted a uniform acquired property policy to insure fair and equitable treatment of borrowers in all regions.

FUTURE ISSUES

Change seldom comes easily. It has not in the FCS and yet it is occurring notwithstanding litigation to test the validity of FCA's assessment regulations, debate over the amount of power to concentrate in FCCA, in differences on legislative and policy issues with the government's regulator - the Farm Credit Administration.

It seems logical that public policy debate will continue in 1987 regarding the possible role of the Farm Credit System as a secondary mortgage market maker, what system structure will best serve the needs of agriculture, how to best strengthen permanent capital within the system and how to mitigate the painful and costly out-migration from agriculture of insolvent farm businesses.

None of these are simple policy issues. They are too important to ignore and too important to leave to chance solution. Each must be addressed through our democratic processes.

TABLE I

FARM CREDIT SYSTEM FINANCIAL CONDITION

(BILLIONS)

	<u>9/30/86</u>	<u>6/30/86</u>	<u>3/31/86</u>	<u>12/31/85</u>	<u>12/31/84</u>
Net Loans Outstanding	\$58.2	\$61.5	\$64.9	\$66.6	\$77.1
Nonaccrual Loans	8.0	7.6	5.9	5.3	1.4
Acquired Properties	1.1	1.0	1.0	1.0	.3 [#]
Other High Risk Loans	4.7	4.7	5.1	4.0	5.4 [#]
90+ Days Delinquent	1.2	1.6	1.9	1.2	-
Total Capital	6.3	7.0	7.9	8.4	11.8
Stock	4.4	4.6	4.7	5.0	5.6
Surplus	1.9	2.4	3.2	3.4	6.2
Total Risk Funds	10.0	10.5	11.1	11.6	13.1
Loss Reserves	3.7	3.5	3.2	3.2	1.3

[#]Excludes PCAs

TABLE II

FARM CREDIT SYSTEM FINANCIAL CONDITION

	<u>9/30/86</u>	<u>6/30/86</u>	<u>3/31/86</u>	<u>12/31/85</u>	<u>12/31/84</u>
Nonaccrual Loans/Loans Outstanding	13.0%	12.0%	9.0%	8.0%	2.0%
Loss Reserves/Loans Outstanding	6.0%	5.4%	4.7%	4.6%	1.7%
Nonearning Loans (Nonaccrual) and Acquired Property to Capital	1.4:1	1.2:1	0.9:1	0.8:1	.19:1
High Risk Loans (Nonaccrual and Other High Risk Loans) to Capital	2.0:1	1.8:1	1.4:1	1.1:1	##
High Risk Loans to Risk Funds	1.3:1	1.2:1	1.0:1	0.8:1	##
High Risk Loans to Surplus and Loss Reserves	2.3:1	2.1:1	1.7:1	1.4:1	##
High Risk Loans to Loss Reserves	3.4:1	3.5:1	3.4:1	2.9:1	##

##Comparable information not available

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OUTLOOK FOR FARM CREDIT PRIVATE SECTOR PERSPECTIVE

James R. Eatherly, Chairman and CEO
First National Bank, Tonkawa, OK

The 1987 financial outlook for farmers and agricultural bankers is not a picture of optimism; but, neither is it as hopeless as one might have us believe. Leverage for some farmers will continue to increase, as well as the pressure on liquidity and incomes.

While well-managed operations, with low debt, may prosper, there are many others who will feel increasing financial stress.

The goal of agricultural banks is to aid their farm customers; but, this must be done in the economic and regulatory environment in which banks find themselves.

It is becoming increasingly difficult for some banks to maintain their soundness as prescribed by banking regulators while continuing to meet the credit needs of their farm customers. Reduced farm income and declining asset values have handicapped and created intensified credit problems for both farmers and banks alike.

Essentially, in 1987, we must direct our attention to not only maintaining the soundness of the well-managed agricultural bank; but, also to the good manager farmer when there is a reasonable prospect that he will eventually be able to repay his loan.

The Federal bank regulatory agencies and the Farmers Home Administration are fully aware of the problems in the agricultural sector and the financial strains these problems have created for borrowers, lenders and rural communities. In light of these conditions, the banking agencies and the Farmers Home Administration are prepared to assist basically sound, well-managed banks and farmers through this transitional period.

In order to help alleviate strains on farm lenders and provide additional time to resolve problems, the banking agencies have expressed their support for and commitment to a capital forbearance policy. The major function of capital is to absorb unanticipated losses and to help a bank weather a period of adversity. Heavy losses may reduce a bank's capital below normal levels or below minimum regulatory guidelines.

The banking agencies reaffirm their policies not to discourage banks from forbearing on farm loans through appropriate debt restructuring, recognizing that such restructuring may be in the interest of both the bank and the borrower when there is a reasonable prospect that the borrower will eventually be able to repay the loan.

Debt restructuring can best be accomplished through the Farmers Home Administration's guaranteed lending programs.

The original purpose of the Farmers Home Administration was to provide agricultural credit to those family farmers who were unable to obtain credit from any other lending source. This credit was to be used both for short term (one to two year operating loans); intermediate term credit (two to seven years) for the purchase of machinery and longer term assets; and for long term real estate notes to a maximum of forty years.

Today's Farmers Home Administration and its guaranteed lending programs are a vital tool for the agricultural banks. Those banks that avail themselves of the guaranteed lending programs provide the means and the opportunity for their deserving farm customers to survive until economic conditions improve. They also maintain their own soundness in the process.

The Guaranteed portion of these loans, the maximum guarantee being 90%, is automatically passed during bank examinations by the regulatory agencies, and rightfully so because the bank has, with the assistance of the Farmers Home Administration, converted a farm loan into an instrument backed by the full faith and credit of our Government.

The benefits to the bank are many and most advantageous. A risk has been eliminated. Liquidity has increased. Lending limits have increased. Resources have been expanded and certainly not to be overlooked, is the profitability factor.

The guaranteed portion of the loan can be sold in the secondary market at an amount greater than par value. When this occurs, the bank books the amount received over par as income and is then in a position to use the proceeds for additional lending purposes. Essentially, the bank made a deserving farmer a guaranteed loan. By making the loan, the bank helped the farmer. The bank sold the guaranteed loan at par plus, enabling the bank to profit. The proceeds from the sale of the guaranteed portion are used to help still another deserving farmer. Both farmer and bank have benefited because of the Farmers Home Administration.

1987 will see a substantial increase in a move by banks to participate in the Farmers Home Administration programs. Risk management will require that banks make increasing use of Farmers Home Administration loan guarantees.

1987 will see banks become more selective when making credit available. Collateral lending has long been replaced by cash flow lending; but, evidence of adequate cash flow is not sufficient in cases where there is the slightest question regarding managerial ability or integrity, and not necessarily in that order.

Banks are expressing a great deal of concern regarding the recently enacted bankruptcy act and the so called "Buyer's Protection" legislation. These two pieces of legislation have substantially diminished their positions, thus, increasing their contingent liabilities. In many cases, additional credit for many farm customers will not be extended. Banks will not be willing to assume undue credit risks.

Risk management will surely be the name of the game for banks in 1987.

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ADJUSTING TO FINANCIAL STRESS

Robert R. Pim
Iowa State Director, Farmers Home Administration

Farm financial stress began in Iowa in 1980, and by 1985, approximately 30% of the state's farmers were experiencing financial stress - cash flow problems, sharp losses in net worth and reductions in standards of living. This group controlled more than 2/3 of the farm debt in Iowa. A study of 1,800 farm families conducted by Iowa State University Extension Service indicated that emotional stress had become an everyday problem. Sixty percent of the respondents said they experienced either a great deal or some stress every day. Client contacts with mental health centers increased dramatically in some rural areas of Iowa. Lenders also experienced personal stress as they dealt with highly stressed clientele in solving their financial difficulties.

Agriculture had not experienced this type of problem for 50 years. Policy makers and government officials had little experience in dealing with widespread financial stress.

Iowa Farmers Home Administration has recognized the importance of providing support to its staff and the farm families they deal with who are also experiencing emotional stress. The agency has cooperated with other agencies in establishing services which meet these needs and has conducted staff training to further develop human relation skills. A partial synopsis of FinHA activities in the area of human relations follows.

RURAL CONCERN HOTLINE

The Rural Concern Hotline was developed to serve as an interagency response to farm families. It is a confidential service managed by the Iowa State University Extension in cooperation with the Iowa Department of Human Service and United Way of Central Iowa. Funding was provided by several public and private sector sources. It is now being supported by State appropriations.

Since February 1985, hotline operators have handled over 19,000 calls. The majority (approximately 85%) of the calls received involved financial/legal issues.

The Hotline was developed to provide information, referrals, and counseling for farm and financial problems, legal problems, individual and family problems, job questions and basic needs for food, fuel, etc.

The need for Rural Concern Hotline is strong and is expected to be needed as agricultural debt restructuring continues in the coming year. The idea developed out of the USDA/FAC.

FmHA has cooperated in establishing the Hotline and the State Director serves on the Advisory Committee.

"FARMERS and LENDERS WORKING TOGETHER"

The above is the title of a videotape recently produced by Iowa State University Extension Service. The tape focuses not only on managing the lender's personal stress, but also on working with highly stressed clientele. FmHA was actively involved in communicating key points throughout the tape. Major portions of the tape were filmed in a local FmHA office using county staff as participants. The importance of developing a trust relationship between borrowers and lenders and maintaining open communication was emphasized by Iowa's FmHA State Director during an interview in one of the segments of the tape.

The tape has been shown to lenders throughout Iowa including FmHA field staff and has received high marks from those who have seen it.

MEDIATION

The Iowa Farmer Creditor Mediation Service, Inc., is a program designed to help farmers and creditors "negotiate win/win outcomes" to problems that have resulted from the poor farm economy. This service is required by State law to be offered prior to a lender foreclosing. There have been 3,500 cases referred to this service. About 30% of the farmers chose not to participate; 1,100 have been resolved. There are about 500 pending cases. Many creditors see mediation helping resolve problems. In many cases communication has totally broken down and mediation causes this to happen again. It helps many farmers be more realistic in their planning and decision making.

In order to have the most effective outcome, farmers need to be adequately prepared for mediation. Most operators do not have training for this, and it is not the job of the mediator to do this. There is a need for local groups to help clients prepare for mediation. Among other things this requires complete financial information and developing several realistic alternatives to be presented to the lender.

Each farmer's credit situation is unique and therefore must be dealt with on an individual basis. At present there are over \$500,000,000 Federal Land Bank loans that are problems. This represents an estimated 7,000 borrowers. Each of these need to be worked on individually to determine their future financing possibilities. Long term credit is not available to refinance FLB, therefore restructuring must be done using Farm Credit resources.

FmHA STAFF DEVELOPMENT

We are aware that to get maximum benefit out of the lender-borrower relationship a "Trust-relationship" must be established. The economic crisis has stressed this association in many cases. It was therefore important that we analyse again the basics of this and found it almost totally parallels the basics of counseling. We became aware that in order to successfully help farmers restructure financially, we had to be good counselors.

Since early 1984 Iowa FmHA has contracted the services of Dr. Gary Rosberg, Counselor, to provide training and assistance to FmHA staff in the areas of communication skills, stress management, team building and conflict resolution. Dr. Rosberg has also provided assistance on an individual basis to staff dealing with issues of stress management and wellness, substance abuse, interpersonal relationship, emotional and family needs.

An analysis of the services provided is below:

	# Sessions	# Hours
10/21/84 - 8/20/85		
Group Training	10	111.5
Individual Consultation	45	62
10/2/85 - 10/6/86		
Group Training	13	135.5
Individual Consultation	16	19.5

Results from the training have been positive. Evaluations from staff indicate they have learned more effective methods of communicating with their clients and co-workers. Many are practicing positive methods of coping with stress and are more concerned with wellness in general. Six staff received intensive training in the area of communication skills. Half have remained with the agency and are relating more effectively with others.

Approximately 9% of the permanent employees have individually sought counseling assistance. It is felt these employees have benefited from the service and maintained a level of productivity to a greater extent than had this assistance not been as readily available.

Perhaps a more indirect result of the staff's contact with Dr. Rosberg has been a greater acceptance of and appreciation for the benefits of counseling. With this acceptance has come a greater willingness to refer borrowers experiencing emotional distress to facilities which provide this assistance.

An article in the October 20, 1986, issue of Wall Street Journal indicates an increasing number of farmers seeking out private counseling help. "Surveys done by Serco Marketing have found that in 1983, 46% of Midwesterners questioned said they wouldn't associate with someone in psychotherapy. By 1986 that figure was down to 7%."

As lenders, FmHA staff can only benefit by increasing their human relations and counseling skills. As we assist families adjusting to financial stress, it is impossible to ignore the human side of lending and the importance of dealing with borrowers emotional needs as decisions are made and problems resolved.

(Information on financial stress taken from "Extension and Research Programs on Rural Financial Stress in Iowa" by Kathleen Berry and Robert Jolly.)

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TRADE POLICY ISSUES

Charles J. O'Mara
Assistant Administrator
International Trade Policy
Foreign Agricultural Service

Five years ago U. S. agricultural exports were over \$43 billion. This year they are three-fifths of that value. In the years in between we have seen U. S. farm income drop to levels not seen since before World War II. U. S. price support programs kept prices of several important commodities at levels that were not competitive on international markets. Appreciation of the dollar added to this problem. U. S. exports as a share of total world trade dropped from 46% to 31% for wheat, from 64% to 43% for corn, from 24% to 16% for rice.

At the same time, U. S. price policies encouraged expansion of production and exports by others. Some of our competitors, in particular the European Community, expanded exports with the help of substantial export subsidies. All of these developments represent trade policy issues which have commanded the attention of the Administration and the Congress.

The Administration has sought to resolve these issues in various ways, but particularly in ways that will remain effective over a longer term. Considerable success has been achieved in reducing the value of the dollar, although the currencies of some of our main competitors have also depreciated at the same time.

The problem of support prices out of line with international markets was dealt with in the Food Security Act of 1985, and its results are reflected in export forecasts for 1986/87. The tonnage of U. S. exports of wheat and flour is expected to be up 18%; coarse grains, up 23%; soybeans, up 3% over 1985/86 and up 27% over 1984/85; rice in calendar year 1987, up 18% over 1986; cotton, at 1,470,000 metric tons, nearly back to peak 1983/84 levels.

The problem of foreign export subsidy practices was addressed by the Congress by enacting the Export Enhancement Program and the Targeted Export Assistance Program in the 1985 Food Security Act. The Administration is carrying out these programs vigorously, even though in the long run U. S. competitiveness in the world marketplace depends on the increasing efficiency of U. S. producers and their ability to meet fair competition without subsidies.

A number of countries have found the new aggressive export posture of the United States difficult to accept. In order to meet the competition they must accept the lower prices too or raise subsidies. Frankly, we hope that the more realistic price level will discourage uneconomic production, and that the high cost of subsidies will lead to a reduction in these practices.

The important fact, however, is that these changes in U. S. policy are permanent, dictated by economics. The objective of United States agricultural trade policy is to create an environment in which agricultural production and trade are carried out according to the needs of the marketplace. The Administration seeks free trade out of necessity, not just ideological conviction.

Secretary Lyng said at his confirmation hearings that expanding exports is our highest priority. This reflects not only our need to reverse the decline of the last several years, but the increasing dependence of American agriculture on exports. It is possible that by the end of the century one harvested acre in two will produce for export. Wheat, soybeans, cotton and rice production are already close to or above that ratio.

We are also experiencing a relative growth in high value or processed agricultural exports, which now comprise some 40% of the total. This trend will also continue. Indeed we are stressing high value products in our market development programs because the processing means more jobs and more business for rural communities.

To be competitive in export markets requires efficiency. The alternative -- a protective system that holds prices high, stimulates surplus production and requires export subsidies to dump the surpluses on world markets -- cannot work in the long run. It is self-defeating because the continuing surpluses depress markets and raise program costs to unacceptable levels. Even the European Community, which uses such a system, is finding this out.

There is one other alternative -- to cut back U. S. production and give the export market to others. This is clearly unacceptable, since it would mean leaving much of American agriculture without a viable market base.

Finally, if we expect to export, we must also import. Our most rapidly expanding export markets are in the developing countries. They cannot continue to buy from us in increasing amounts unless we allow them to earn money by selling their products, both agricultural and industrial, in the United States. This is another fundamental reason U. S. trade policies, from an agricultural viewpoint, must be market oriented.

For the future, therefore, U. S. agricultural trade policy will have three elements, regardless of what Administration is in office.

First, it will be market-oriented at home and aimed at persuading others to adopt market-oriented policies as well.

Second, it will contain necessary protection for U. S. producers from the effects of foreign unfair trade practices. Our answer to other countries who want us to open our markets for dairy products and meat, for example, has always been that we are prepared to put U. S. import policies on the negotiating table whenever others are, but the United States is not in a position to be the only open market in the world. We will also use all appropriate means to meet foreign subsidized competition.

Third, it will be open to negotiation of long term changes in trading rules to establish international agreement on the conditions of fair trade. The framework for such rules now is the General Agreement on Tariffs and Trade, and most countries acknowledge that the GATT rules don't work. We hope to change that in the new round of trade negotiations that began in Punta del Este, Uruguay in September.

In short, U. S. agricultural trade policy is and will be market-oriented. It must be so if the United States is to export, and U. S. farmers are increasingly dependent upon exports. There are no short term solutions. While there will always be short term problems to be dealt with, our eyes must be on the ultimate goal, secured in the end through international negotiations: a trading environment which allows the market to adjust production to demand without significant government interference.

To secure these objectives the Administration is acting on several fronts. At home we are moving toward a market oriented policy. The heavy subsidies of the last year or two will be reduced in some way when Congress returns. However, we will retain our ability to meet foreign competition.

We will continue to negotiate bilaterally with many countries. With the European Community we must settle by the end of this year the question of compensation for trade we will lose as the result of the adoption of EC agricultural protection by the new EC members, Spain and Portugal.

With Japan we will return to the question of expansion of the market for beef and citrus fruit and removal of quotas for a number of other products.

With Canada we are pursuing several specific trade disputes, but more importantly we are engaged in the negotiation of a comprehensive trade agreement that could include provisions to eliminate trade barriers across the board between both countries.

With several developing countries we are seeking specific actions to remove trade barriers. We are particularly encouraged that Mexico recently became a member of the General Agreement on Tariffs and Trade, and agreed, as part of its membership, to reduce and bind a number of tariffs, phase out its licensing system and eliminate certain subsidy practices.

In the new Uruguay Round of Multilateral Trade Negotiations we will be seeking new rules that will make free and fair trade a feasible objective for all countries. That will be a tall order. Not all countries even agree with the objective. Nevertheless, when we met at Punta del Este in September, we reached agreement on agenda for negotiations that has no strings attached.

A brief look at the history of the GATT and the U. S. role in its creation will help show the importance of these negotiations. Following a recession after World War I, feelings of nationalism and isolationism led the United States to protectionist policies. High tariffs reached their peak in the Depression-induced Smoot-Hawley Tariff Act of 1930. Swift retaliation by other countries contributed to a 70-percent drop in the value of U. S. exports by 1933.

In 1934, the realization that protectionism had only added to the Depression led to the enactment of the Reciprocal Trade Agreements Act. This Act for the first time empowered the President to cut tariffs on his own authority in exchange for equivalent concessions from other countries. By the 1940's agreements had been negotiated with twenty-five countries. These bilateral agreements were an important element in the nation's recovery from the Depression, and led to support for a multilateral approach to trade policy after World War II.

In 1945, the United States and Great Britain proposed the formation of an International Trade Organization (ITO) to oversee a comprehensive agreement on the conduct of policies governing international trade policy, investment, cartels, commodity agreements, and economic development. As a complement to the ITO, twenty-three countries engaged in tariff negotiations with each other and drafted the General Agreement on Tariffs and Trade (GATT) as a set of rules to protect the value of the concessions agreed.

In the end, only the GATT was approved. It was immediately amended in 1948 to include a number of the principles in the ITO. Other changes, mostly minor, were added in later years. The GATT now is essentially an agreement that member countries will not discriminate against each other (will grant each other most-favored-nation treatment), that tariffs will generally be the only form of import protection allowed, and that tariff levels may be negotiated. Rules to protect tariff concessions include provisions on subsidies and on the exceptional use of import restrictions.

The United States led in the adoption of a rule in 1957 prohibiting the use of export subsidies, but the United States and others would not extend that prohibition to "primary products," including unprocessed agricultural products. Moreover, in order to use Section 22 of the Agricultural Adjustment Act to protect U. S. farm programs, the United States in 1955 asked for a waiver from the GATT obligation not to use import restrictions.

Other countries have also prevented the GATT rules from having an impact on agricultural programs. The European Community, for example, uses variable levies on agricultural imports to raise their prices above domestic support levels.

Variable levies were not foreseen when the GATT was drafted, and no agreement has been reached on which GATT obligations, if any, apply to them. The EC has also made aggressive use of export subsidies.

The GATT became an organization through the establishment of a Secretariat to serve the annual meeting of member countries and interim meetings that it might establish. Enforcement of GATT rules is by withdrawal of concessions after agreement by member governments. Since the procedure is easily blocked, changes to make the rules effective are a high priority in the new Uruguay Round.

The negotiations launched in September are the eighth round since the inception of the GATT. Early rounds involved tariff cuts only. The 1960-61 "Dillon Round" negotiations were complicated by parallel talks to reach agreement on the common external tariff of the new European Community. The "Kennedy Round" from 1964 to 1967 was more ambitious in seeking across-the-board tariff cuts and a solution to the problems posed by the European Community's variable import levies for agricultural products. The most ambitious round to date, the "Tokyo Round," lasted from 1973 to 1979. Again agriculture was the area of least progress. A number of "Codes" were agreed to deal more effectively with nontariff policies such as government procurement, product standards and other technical barriers to trade, customs valuation, import licensing, and subsidies, but problems peculiar to agriculture were left unaffected.

While U. S. agricultural exports have benefited significantly from some of the tariff concessions in past negotiations -- e.g., the EC commitment to duty-free treatment for soybeans and soybean meal allowed exports of these products to the EC to grow from close to zero in 1960-61 to over \$2 billion in 1985 -- the United States believes it is important that the Uruguay Round negotiators tackle the fundamental agricultural problem: isolation of agricultural production from the market.

In the U. S. view, therefore, negotiators should seek agreement that a fair trading environment for agricultural products requires all countries to remove agricultural trade barriers and export assistance across the board. If governments are not willing to let competition determine the level of production and trade, all governments will face intolerable costs of surplus disposal and farm support, and competition will continue to depend on arbitrary, unfair and unpredictable government actions.

Agreement will depend, among other things, on the willingness of each country to provide essential farm income protection in ways that do not prevent adjustment of production and trade to the needs of the market. The U. S. position, for the reasons outlined above, is aimed at achieving significant movement toward free trade. The United States is seeking commitments that countries will apply no new import barriers and will phase out existing nontariff barriers. We want to freeze the present level of export subsidies and phase them out. And we want greater international harmonization of food, plant and animal health regulations.

Finally, the United States wants improvements in the GATT dispute settlement procedures for all products, so that once trading nations have agreed on better rules, there can be assurance that they will be applied consistently and dependably.

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EXPORT PROGRAMS AND TRADE ISSUES PANEL
PERSPECTIVES FROM OTHER GRAIN EXPORTING NATIONS:
THE ARGENTINE POINT OF VIEW

Mr. Manuel Otero
Minister Counselor for Agricultural Affairs
Embassy of Argentina

AMONG THE GROUP OF GRAIN EXPORTING COUNTRIES, ARGENTINA IS THE ONLY ONE WHICH IS A MAJOR EXPORTER AS WELL AS A DEVELOPING NATION. THE LATTER GIVES MY COUNTRY A PARTICULAR VULNERABILITY IN COPING WITH THE PRESENT AGRICULTURAL CRUNCH.

THIS CRISIS CHARACTERIZED BY A SERIOUS DIVORCE BETWEEN SUPPLY AND DEMAND IS HAVING A SEVERE IMPACT NOT ONLY ON THE ARGENTINE AGRICULTURAL SECTOR BUT ALSO ON THE WHOLE ECONOMY WHICH HEAVILY DEPENDS ON EXPORTS OF GRAIN AND BYPRODUCTS.

ALTHOUGH MY COUNTRY HAS NOT CONTRIBUTED TO THIS SITUATION IT IS, PARADOXICALLY, SUFFERING ITS CONSEQUENCES IN A GREATER DEGREE THAN SOME EXPORTING COUNTRIES THAT APPLY SUBSIDIES EITHER ON PRODUCTION OR ON TRADE, OR ON BOTH.

THE UNBALANCE THAT AFFECTS WORLD GRAIN MARKETS RECOGNIZES TWO FACTORS: OVERPRODUCTION AND UNDERCONSUMPTION. REGARDING THE FIRST FACTOR THE AGRICULTURAL POLICIES OF SOME DEVELOPED NATIONS DISTANCED FROM THE REALITY OF THE MARKETS ARE RESPONSIBLE FOR HIGH STOCKS WHICH IN TURN EXERT A NEGATIVE PRESSURE ON PRICES. AS TO THE SECOND FACTOR IT SEEMS EVIDENT THAT A SUBSTANTIAL NUMBER OF COUNTRIES WITH A LARGE POTENTIAL DEMAND ARE OUT OF THE MARKETS BECAUSE OF ECONOMICS REASONS, MAINLY THOSE ARISING FROM HIGH INDEBTEDNESS.

THIS IS WHY DURING THE LAST FIFTY YEARS, WORLD AGRICULTURAL PRICES HAVE REACHED THE LOWEST LEVEL IN REAL TERMS EVEN EXCEEDING THOSE REGISTERED DURING THE DEPRESSION OF THE 30'S. CONSTANT PRICES FOR WHEAT AND CORN HAVE DECREASED IN AN AVERAGE OF 24%, IN RELATION TO THE VALUES RECORDED IN 1981.

THE AGRICULTURAL TRADE SITUATION HAS RECENTLY BECOME MORE SERIOUS SINCE THE LAUNCHING OF THE "FOOD SECURITY ACT" AT THE END OF 1985. ALTHOUGH THE NEW LEGISLATION RETAINS MANY OF THE MECHANISMS OF THE FORMER LAWS, IT DOES REPRESENT A CHANGE IN THE DIRECTION OF AMERICAN AGRICULTURAL POLICY BY GIVING HIGH PRIORITY TO THE AREA OF FOREIGN TRADE.

IN FACT, THE "1985 FARM BILL" REFLECTS THE FIRM DECISION OF THE U.S. TO REGAIN ITS LOST SHARES IN WORLD MARKETS THROUGH A PACKAGE OF AGGRESSIVE PROMOTION TRADE MECHANISMS.

IN ADDITION TO THE SHARP DECLINE IN LOAN RATES AND THE DEVALUATION OF THE DOLLAR, WHICH HAS IMPROVED THE COMPETITIVENESS OF THE U.S. IN THE GRAIN MARKETS, THERE ARE AROUND 8 BILLION DOLLARS ANNUALLY AVAILABLE TO FINANCE 15 EXPORT PROMOTION PROGRAMS. THIS FIGURE WHICH IS AROUND 30% OF THE VALUE OF THE U.S. AGRICULTURAL EXPORTS SHOWS THAT THE TRADE GOALS OF THE UNITED STATES CLEARLY EXCEED THE BILATERAL FRAMEWORK OF THE COMMERCIAL CONFRONTATION INITIATED IN 1983 WITH EC.

WITHIN THIS PACKAGE OF MEASURES AIMED TOWARDS ARTIFICIALLY BOOSTERING EXPORTS, THE EXPORT ENHANCEMENT PROGRAM, HAS BEEN BY FAR THE MOST PUBLICIZED WEAPON. FROM THE TIME THIS PROGRAM WAS ANNOUNCED, AROUND 20 MILLION MT. TONS (EQUIVALENT GRAIN) WERE OFFERED TO DIFFERENT MARKETS CONCENTRATED IN THE MIDDLE EAST AND NORTH AFRICA. THIS VOLUME REPRESENTS 20% OF THE TOTAL AMERICAN EXPORT VOLUME.

IN THE SPECIFIC CASE OF WHEAT, UNDOUBTEDLY THE MOST PROTECTED GRAIN, AROUND 7 MILLION MT. TONS HAVE BEEN SOLD, WHICH MEANS THAT ONE OF EVERY FOUR TONS IS BEING CHanneled THROUGH THIS PROGRAM.

EVEN THOUGH ARGENTINA RECOGNIZES THE EFFORT MADE BY THE U.S. TO MINIMIZE THE DAMAGE DONE TO NATIONS THAT DO NOT SUBSIDIZE THEIR EXPORTS, IT IS VIRTUALLY IMPOSSIBLE NOT TO RECEIVE SOME BACKLASHES SINCE THERE IS ONLY ONE MARKETPLACE.

ONE OF THE SERIOUS DOUBTS REMAINING ARE THOSE REGARDING THE TRANSITORY NATURE OF THESE MEASURES WHICH CLEARLY DISRUPT WORLD MARKETS. THE GREAT QUESTION MARK IS WHETHER THESE MEASURES ARE TEMPORARY MEANS OF REACHING A HARMONIC BALANCE BETWEEN SUPPLY AND DEMAND OR, IF THEY ARE AN END IN THEMSELVES. SO FAR EXPERIENCE INDICATES THAT IT IS MUCH EASIER TO IMPLEMENT EXPORT SUBSIDIES THAN TO REPEAL THEM.

WHILE DURING THE 70'S LESS THAN 10% OF AMERICAN AGRICULTURAL EXPORTS RECEIVED SOME TYPE OF FEDERAL ASSISTANCE, THIS ASSISTANCE WILL NOW BE INCREASED BY MORE THAN 20% WHICH IMPLIES THAT ONE OUT OF EVERY 5 TONS WILL BE SOLD ON A NON-COMMERCIAL BASIS.

TAKING INTO ACCOUNT THAT AMERICAN PRODUCERS ARE PROTECTED FROM THIS NEW SCENARIO THROUGH MASSIVE SUBSIDIES, IT IS A FALACY TO TALK ABOUT A MARKET ORIENTED APPROACH THAT, IN THE JUDGEMENT OF SOME ANALYSTS, CHARACTERIZES THE "1985 FARM BILL". THE SITUATION OF ARGENTINE PRODUCERS, HOWEVER, IS COMPLETELY DIFFERENT SINCE THEY ARE TOTALLY EXPOSED TO EVERY MARKET FLUCTUATION.

DURING THE LAST 25 YEARS, GRAIN PRODUCTION IN ARGENTINA INCREASED AT A RATE OF 3.8% ANNUALLY, NOTICEABLY HIGHER THAN THE WORLD AVERAGE. DURING THAT PERIOD, EXPORTS INCREASED AT A RATE OF 5.5% ANNUALLY. BOTH FIGURES ARE THE RESULT OF IMPORTANT COMPARATIVE ADVANTAGES MY COUNTRY HAS IN THIS AREA AND, AT THE SAME TIME, THEY REFLECT THE DEGREE OF COMPETITIVENESS REACHED WITHOUT THE NEED OF RESORTING TO ANY TYPE OF SUBSIDY NOR FINANCIAL MECHANISM.

THIS IMPORTANT ARGENTINE POTENTIAL IS BEING THREATENED BY THE UNFAIR COMPETITION WHICH PRESENTLY DOMINATES THE INTERNATIONAL AGRICULTURAL ARENA.

A CLEAR EXAMPLE OF MY COUNTRY'S VULNERABILITY TO THIS CRISIS MAY BE SEEN WHEN COMPARING THE U.S. AND ARGENTINE EXPORT PRICES OF WHEAT. WHEREAS AMERICAN PRICES (FOB GULF) HAVE FALLEN 29% BETWEEN 1978-79 AND 1986, IN ARGENTINA PRICES (FOB BUENOS AIRES) HAVE DECREASED BY 40%. CORN PRICES DURING THE SAME PERIOD HAVE DECLINED 34% IN THE U.S. AND 41% IN ARGENTINA. THE RESULT HAS BEEN THAT A COUNTRY THAT DID NOT CAUSE THE PRESENT CRISIS IS BEING THE ONE MOST AFFECTED BY IT.

BECAUSE OF THE SERIOUS SITUATION RESULTING FROM MY COUNTRY'S HIGH FOREIGN DEBT, THE PRICE LEVELS OF GRAIN EXPORTS AND BYPRODUCTS ARE OF VITAL IMPORTANCE TO ARGENTINA SINCE THESE PRODUCTS ARE THE MAIN SOURCE OF FOREIGN CURRENCY. DURING THE LAST DECADE THE VALUE OF THESE EXPORTS REPRESENTED AN AVERAGE 50% OF THE TOTAL EXPORTS OF THE COUNTRY.

BETWEEN 1980 AND 1986, THE VOLUME OF OUR EXPORTS HAS GROWN 67% WHILE IN TERMS OF VALUE, THE INCREASE WAS A MERELY 5%. THE DIFFERENCE CAN BE EXPLAINED MAINLY BY THE FALL IN EXPORT PRICES IN 1986 WHICH REPRESENTED ONLY A 63% OF THE CORRESPONDING VALUE FOR 1980.

IT IS VERY DIFFICULT TO PINPOINT THE DAMAGES CAUSED BY UNFAIR COMPETITION ON THE ECONOMY OF MY COUNTRY. HOWEVER, AMONG THE IMMEDIATE DIRECT EFFECTS, IT HAS BEEN ESTIMATED THAT THE GRAIN EXPORTS AND BYPRODUCTS DURING 1985 WOULD HAVE REACHED 7,2 BILLION DOLLARS INSTEAD OF 4,3 BILLION, IF THE VOLUME EXPORTED WOULD HAVE CORRESPONDED IN PRICE TO THE THREE YEAR PERIOD 1978-80. THIS DIFFERENCE OF NEARLY 3 BILLION DOLLARS REPRESENTS MORE THAN 50% OF THE ANNUAL SERVICE OF THE FOREIGN DEBT OR AN EQUIVALENT OF 66% OF THE TOTAL IMPORTS OF THE COUNTRY.

IF A FALL IN GRAIN PRICES HAD NOT TAKEN PLACE DURING LAST YEAR, ARGENTINA WOULD PROBABLY NOT HAVE RESORTED TO ADDITIONAL FINANCIAL ASSISTANCE FROM INTERNATIONAL ORGANIZATIONS. THIS FACT REAFFIRMS THAT AGRICULTURE IS AN INTERNATIONAL ISSUE AND IT IS DIRECTLY RELATED, IN THIS CASE, TO THE SUBJECT OF FOREIGN DEBT.

THE LACK OF INCENTIVES FOR ARGENTINE FARMERS IS REFLECTED IN THE DECREASE IN SOWING AREA WHICH HAS RESULTED IN LOWER PRODUCTION.

THE ESTIMATED 1986-87 CROP YEAR REVEALS A 4% DECLINE COMPARED TO THE PREVIOUS YEAR AND 16% DECLINE IF IT IS COMPARED TO THE RECORD 43.9 MILLION MT. TONS REACHED DURING 1984-85.

IT IS EVIDENT THAT THIS DECREASE IN PRODUCTION IS THE DIRECT CONSEQUENCE OF THE RESULTING NEGATIVE ECONOMIC SIGNALS RECEIVED FROM MARKETS, AND NOT A RESULT OF THE IMPLEMENTATION OF ANY KIND OF SET-ASIDE PROGRAMS WHICH, AS IT IS WELL-KNOWN, ARE NOT VERY EFFICIENT IN CONTROLLING SUPPLY.

THE SERIOUSNESS OF THE AGRICULTURAL TRADE CRISIS HAS INTENSIFIED THE DEBATE ON THE RELATIVE EFFICIENCY OF OUR MARKETING SYSTEM WHERE IT IS POSSIBLE TO ATTAIN SUBSTANTIAL PROGRESS SPECIALLY IN THE AREAS OF TRANSPORTATION, STORAGE, SHIPPING AND DISTRIBUTION. AT THE SAME TIME A MAJOR REFORM IN OUR TAX SYSTEM WHICH WILL ELIMINATE EXPORT TAXES, IS IN PROGRESS.

THESE CHANGES WILL IMPROVE EVEN MORE THE COMPETITIVENESS OF ARGENTINA IN WORLD MARKETS, WHERE MY COUNTRY HAS DECIDED TO MAKE A FIRM STAND TO REASSERT ITS PRESENCE, BASED ON OUR NATURAL PRODUCTION EFFICIENCY.

THE SEARCH FOR A STABLE AND LASTING SOLUTION TO THE WORLD AGRICULTURAL CRISIS MUST ENTAIL A PROGRESSIVE DISMANTLING OF THE AGRICULTURAL PROGRAMS WHICH ARE RESPONSIBLE FOR THE PRESENT CONTEXT. IN THE SHORT TERM, THE COUNTRIES RESPONSIBLE FOR THIS SITUATION SHOULD MAKE A GREATER EFFORT TO CONTROL GRAIN PRODUCTION WHILE WORLD DEMAND IMPROVES THROUGH ECONOMIC GROWTH.

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Thursday, December 4, 1986

EXPORT PROGRAMS AND TRADE ISSUES: AUSTRALIAN PERSPECTIVE G.S.R. Wood, Minister (Commercial), Embassy of Australia

The U.S. Administration has re-confirmed that its objective is to seek early "fast track" negotiations on agriculture in the Uruguay Round of trade negotiations. The key elements are to secure a standstill, a ceiling on the extent of government support and intervention affecting exports and imports of agricultural products, and then to secure a systematic rollback, in all countries, of governmental support measures. That is an objective that Australia and the United States share in common. Our two countries worked very closely together at the start of this new round of multi-trade negotiations in Punta del Este and it is very much our wish that we continue to do so. Australia was one of a group of fourteen fair trading countries, the Cairns Group, whose objective is to see early progress to resolving the crisis facing agriculture.

At the same time however one cannot but be struck by contradictions in policy objectives in Washington. The Administration's objective of rolling back assistance is one we support but, regrettably it does not seem to be the objective of all in Congress. We again hear of proposals to extend marketing loans, which are tantamount to massive export subsidies, from products to which they now apply - cotton and rice, wheat and feed grains. Secondly there are constant references being made to the possibility of Congress passing a trade bill next year that may have a protectionist character. If such a bill were passed it would be highly detrimental to the United States farmer, for reasons I will mention shortly. U.S. agriculture has a very keen interest in the Trade Bill debate that will take place in Congress next year. A third contradiction that strikes those of us observing the discussion on agriculture in Washington, is that the domestic justification for high supports for U.S. agriculture is to protect the family farm; the external international "face" of those policies is an aggressive push to restore the U.S. share of world markets back to the historical high level that applied in 1980/81, a time when the performance of countries like Australia was detrimentally affected by drought.

It is also notable that very few people are weighing the full costs of U.S. policies both on this country, and to the international trading community. The two aspects are of course linked. Geoff Miller has referred to the crisis in international agriculture in his earlier address; it is worth underlining some of the trade implications and wider economic costs to the U.S. of the agricultural trade policies now being pursued.

Before doing that I would refer to one particular point underlined in the Miller paper. That is that for all the drop in prices that has occurred in world wheat trade total demand has not increased and in fact has marginally reduced. It is also noteworthy that through seasonal conditions at least

grain production in both Canada and Australia will be higher in 1986 than in previous years, though acreage planted in Australia is down to some extent. Some of the key presumptions of those who argued for the 1985 measures are therefore in doubt. U.S. and EEC policies mean exporters of grain are now competing at lower prices for a shrinking world market.

What are the costs of those policies? The first cost and most obvious one is the cost to the budget. The official figure for spending under the Farm Security Act in 1986 is \$26 billion and there are regular reports that in fact it is higher. Obviously even for this country that is a very significant amount especially if those policies are causing a lowering of world prices but no increase in demand. The second cost the U.S. needs to be very aware of is that these policies are having a detrimental impact on relations between close friends and allies particularly with countries like Australia, Thailand and Cairns Group countries that are non-subsidising exporters. In a situation in which the wheat grower in Australia derives his entire return from the proceeds of sales to domestic and to the international market with no government assistance, what happens on world markets has a critical effect on his fortunes and on the economy generally. The Government does provide a "safety net" price guarantee but in the eight years to date there have been no funds provided by the government to the wheat industry under these arrangements. The guaranteed minimum price is the average of returns in two past years with an estimated return for the year to come. As world prices fall so does the GMP. At present it is the equivalent of \$1.65 a bushel compared with the U.S. loan rate of approximately \$2.40 a bushel and the U.S. target price of \$4.38.

The third cost of agricultural subsidies is that, obviously, the fall in world grain prices affects the ability of countries like Australia to purchase from the U.S. Your competitor in grains, rice, cotton, or whatever is also your customer for computers, machinery, agricultural products, defence equipment etc.

Mr Ortera has just made reference to the fact that the amount of additional IMF funding that his country is presently negotiating to secure, is the equivalent to the fall in world wheat prices on Argentinian returns from grain sales. Australia encounters a major deficit in its trade with the United States; the balance runs 2:1 in U.S. favour. Clearly at some stage Australia's ability to buy from the U.S. is reduced by the effect of subsidies in world agricultural markets. Subsidies paid to farmers in Iowa or Kansas mean jobs are lost in Silicon Valley and Seattle and elsewhere. One very interesting statistic to come out of the Bureau of Agricultural Economic analysis of the Common Agricultural Policy was that the CAP system had caused the loss of one million jobs in EEC manufacturing industry. The U.S. itself now paying massive assistance to agriculture would do well to reflect on that equation.

There is also one other important "cost". In a recent speech by Mr Lyng he commented that:

"The successful farmers of tomorrow will be those who manage their operations to achieve the lowest cost per unit of production. That's a change, but an important one, from recent years

when the focus was on the highest yield per acre or the greatest gain per animal. And be sure to include in those cost calculations the costs of interest, taxes and everything else associated with doing business".

In our view that same equation will apply internationally as well as domestically. The debate in Australia on agricultural policy is mainly directed towards issues that affect producer production costs. The Australian farm community wants to see the Australian Government reducing any government measures that affect the cost of inputs e.g. any tariffs or charges on fertilisers, farm machinery, petroleum and it also wants to see macro-economic policies followed that lead to lower interest rates and taxation. Basically in Australia the debate on farm policy is about input costs not producer prices. The current crisis in world agriculture and the unprofitable returns being received from world markets redoubles the pressure to reduce production costs. No matter how difficult the current situation facing the Australian farmer one outcome will be that we will have heeded the advice of your Secretary of Agriculture and achieved still lower costs of production. In a situation in which the political energies of the farm sector are directed to arguing for increased Government support, they are not well placed to criticise the demands of other protected industries.

The forthcoming debate on a U.S. Trade Bill seems to have very important implications for the longer term fortunes of the U.S. farmer, both his costs of production and for the situation facing important customers of the U.S. farm sector in this market.

The above comments have been directed at U.S. policy. They are just as relevant to the policies of the Common Market and Japan. The policies of these countries also need to be addressed urgently with the most appropriate context being the Uruguay Round of trade negotiations. It is also absolutely essential that no countries take steps that further aggravate the agricultural crisis for example by increasing subsidies. The Australian Minister for Trade, Mr Dawkins, and the Cairns Group, is proposing a cease fire, a freeze on the level of the commitments currently provided agriculture and it would seem in the interests of both U.S. and EEC to avoid competitive subsidisation. The Uruguay Round negotiations are also important for wider reasons. Why isn't world demand for wheat responding to lower prices? One of the reasons is that many actual or potential markets are increasing their own self-sufficiency. If this is achieved by technological improvements and better agronomy then it is to be welcomed. However often these countries are adopting trade restrictive policies on agriculture and all exporters have an interest in negotiating to secure the opening of markets.

The crisis in agricultural trade therefore brings many costs to the U.S. beyond the most apparent one of high and rising budgetary costs. There are compelling reasons for the major interested countries to jointly push for a ceasefire of subsidies, for rules to govern trade and settle disputes in the agricultural trade area, and for steady reduction of the disruptive elements of government involvement in agricultural pricing and exports.

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"THE FUTURE OF AGRICULTURAL WEATHER SERVICES - A FEDERAL PERSPECTIVE"

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Introduction

Just one year ago, in his opening talk for the 1986 Outlook Conference, then Secretary of Agriculture John Block stressed the need to take action to return profitability to American agriculture and protect the environment from contamination through excess or unnecessary use of chemicals. I know that better agricultural weather services can and must be one of the major contributors to achieving these goals.

The title of this talk "A Federal Perspective on the Future of Agricultural Weather Services" in the United States should call for a rather straightforward answer. However, according to the American Heritage Dictionary-New College Edition, the definition for "perspective" can be defined in several ways. The first is "any of various techniques for representing three-dimensional objects and depth relationships on a two-dimensional surface. The second definition is, "the relationship of aspects of a subject to each other and to a whole; a perspective of history," while a third is simply put "a view or vista."

Each of these definitions might be appropriately applied to this talk. It would be easiest to apply the last definition, "a view or vista", as I perceive it; that is, how the visible portion of the program appears today. However, that would disregard the historical relationships of a complex past. To understand the visible portion of the program as we see it today, we must try to trace the historical path of programs as they evolved into the configuration of Agricultural Weather Services as we know them today. I find all three definitions justifiably appropriate to describe the topic. I'd like to begin by putting my topic in historical perspective. In view of the time, I will concentrate mostly on events of the last 20 years, with special attention to events of the last five years.

Agricultural meteorology has always had three dimensions in the sense that the private sector, the research community, and the Federal Government are all involved. Historically, these program components were more heavily supported by the cooperative, state, and private sector. For example, the Florida Citrus Industry and Cranberry Growers Association in Wisconsin

cooperated in the seasonal fruit frost forecast program. However, the fruit frost forecast program as well as other Agricultural Weather Service programs underwent significant changes in the early 60's and the role of the Federal Government generally increased with a major expansion of the Advisory Agricultural Meteorology program and State Climatology efforts at several Land Grant Universities. It remained at that plateau into the early 1970's. Since then, the role of the private sector and State or University programs has increased and the Federal role has ebbed.

In part, the changes have been driven by innovative research and a rapidly evolving communications technology. These have enabled data to reach the user community more quickly.

Today we stand at another of the crossroads that may have a strong impact on determining future direction. Since 1982, NOAA's budget as returned from OMB has proposed to eliminate the Federal portion of the Nation's Agricultural Weather Services. However, Congress has restored the funding and the program has continued with only minor changes. The most successful agricultural meteorology support programs I have visited recently have interacted extensively between the private sector, the State-University system and Federally funded components. Our other speakers have already expressed the need for cooperation and interaction at all levels. At this time it is impossible to describe with any degree of certainty how the next steps in planning for Federal changes will shape the future of the Agricultural Weather Services. However, I feel very confident that there will be more change. Most likely it will involve greater contributions made by the private sector and the research communities and a smaller role for the Federal Government.

Based on the preliminary results of some recent and ongoing studies designed to outline emerging program changes and contributions being made by the different sectors, it is clear that the role of the Federal Government has continued to ebb during the 1970's. Since 1980, the "Agricultural Research Institute" (ARI) subcommittee on Agricultural Meteorology chaired by Dr. Jon Batholic, a professor of Soils from Michigan State University, has completed a significant effort in developing a broad outline for a National Agricultural Meteorology Program. It called for a cooperative effort and has identified various components to be handled within the private sector, and others best done through State-University programs and or Federal programs. The ARI plan reflects some of the recent trends which show the private sector has continued to greatly enhance its communication systems; State-University programs have increased research efforts on bio-weather model development driven by weather data from agricultural areas and focused additional research on plant-pest-weather relationships necessary for improved understanding of management decisions and their economic implications to the user. The enhanced ability for technology transfer is a key component for any future program changes. The National Weather Service has also increased its efforts to improve accuracy of analysis and prediction for weather events from a few hours, to a few days, to the 30 and 90-day outlooks. These products are now routinely available. The ARI study results were presented at congressional hearings before the Joint Subcommittees on

Science and Technology and Agriculture in June 1984. I believe these hearings contributed to the shaping of the 1985 Farm Bill section which recognized the importance of Agricultural Weather Services to improve management decision making and stresses the need for USDA and NOAA to work together in developing and implementing a national plan.

I must point out that the 1985 Farm Bill does not mandate that the program be only a Federal Program. Indeed, in my view, this would be a step in the wrong direction. The agricultural meteorology program needs are highly different as you move from State to State or Region to Region across the United States. Irrigation is a major component in the west, while it is only a minor to nonexistent component of agriculture in central and eastern states. Because of the diversity in crops and weather events, it is imperative that the State-University and private sectors play major roles in directing and developing programs that meet the unique needs of agriculture in the areas where they work. To get a better grasp on this aspect, a study was initiated last fall by USDA at Michigan State University to survey existing agricultural weather programs throughout the United States. This study will provide an great deal of insight into how diverse existing programs are and help to better identify the intersecting points of cooperation between program data sources, analysis, and interpretation work, communications, and the education of the end user. This is a necessary first step before recommendations on where possible change would enhance the effectiveness of existing programs.

A second project indirectly linked to agricultural meteorology needs and nearing completion is the National Academy of Sciences Board on Atmospheric Sciences and Climate (NAS/BASC) working group study on weather and climate data systems in the United States. This study team has reviewed the data flowing through the WMO/GTS system at NMC, the archives at NCDC and the program role of the NCPO's pilot Regional Climate Data centers. These last two studies and their recommendation will provide a basis to begin a new planning effort designed to support the needs of a future National Agricultural Weather Service.

Finally, the National Weather Service has proposed many changes. The NWS data acquisition, analysis and forecast dissemination system will be a basic source of raw data, forecast information, radar and satellite data. The Next Generation Radar System or (NEXRAD) has already undergone extensive testing and will be coming on line in the next 1-3 years. "Profs", NWS's experimental forecast effort, is providing innovative ways to improve the short term forecast capabilities while work is moving ahead to improve the numerical forecast models at NCAR, GFDL and other universities. Because the technology is changing so rapidly, it is essential that any future agricultural weather system support be sufficiently flexible to incorporate these improvements as they become available.

The scenario I would like to suggest as "most likely" would result in a three-level data observation network. The Federal Government would provide a system for the macro, or synoptic-scale, weather data, the

states and regional centers would maintain the meso-scale data flow and the private sector and research community would work with specialized micro-scale data networks. The key need would be to ensure compatibility between the observed data sets and the ability to exchange data between these user groups in the timely cost effective manner as necessary. I would also see the technology transfer component as a cooperative effort between the Research Community, State and regional governmental programs and the private sector. The private sector cooperators would play the major role in the communication process while the analysis and preparation of information for dissemination for management decision making would be done by a multi-discipline team possibly at the Land Grant Universities. This multi-discipline team would also increase training efforts for the end user on how to best incorporate the information provided into better management decisions. In some cases, the private sector may also make major contributions in the interpretation of weather data and add to the management decision making process for large agricultural producers. This would include scheduling irrigation, and application of herbicides, pesticides and fungicides.

The program which currently comes closest to what I believe could be a proto-type Agricultural Weather Service center of the future is the Regional Program at the University of Nebraska. It offers a model that is flexible and adaptable to the many technological changes expected in the future. The centers at Purdue, Stoneville, Auburn, Texas A&M, Michigan and University of California, Davis, are others which incorporate several of the key components. With significant changes now occurring in the Nation's agricultural programs, this appears to be an excellent time to begin a comprehensive planning effort to meet the needs of future agricultural weather services in the United States.

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THE FUTURE OF AGRICULTURAL WEATHER SERVICES: A PERSPECTIVE FROM ONE STATE

by Dr. Fred V. Nurnberger
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Executive Summary Recommendations:

The agricultural needs for weather services throughout the nation are highly varied during the year, among the states and even within the states. To meet these differing needs, it is recommended that:

1. a program be developed to utilize federal, state and private expertise and resources in a coordinated effort;
2. the program must have suitable flexibility to permit unique state needs to be met at the state level;
3. the federal portion should include but not be limited to the establishment of basic monitoring networks which include variables of importance to agriculture;
4. the states be encouraged to maintain data collection networks to augment the federal network and meet the unique needs of the state; and
5. the federal communications network or other computer network should be made available for cooperating state/local data network managers to facilitate data exchange between the cooperating agencies.

Brief History of Activities in Michigan:

Organized weather and climatological observations in Michigan began in 1863 under the direction of Dr. Robert C. Kedzie, who was professor of Chemistry at Michigan Agricultural College (now Michigan State University, MSU) and president of the State Medical Society. By the 1870's, he had an organized network of doctors throughout the state reporting weather conditions in association with diseases. In addition to the common parameters, total ozone was measured via a specially treated paper.

The Michigan Weather Service (MWS) was established in 1895 in the State Department of Agriculture to complement and augment the new U.S. Weather Bureau (USWB). The local USWB office chief was designated the head of the MWS. Support was provided to assist in instrument procurement and operations.

This arrangement continued through the 1950's, during which time the role of the MWS became more in support of climatological services as the USWB expanded its forecasting role. In the early 1960's, the USWB established the Advisory Agricultural Meteorologist (AAM) program in Michigan. Under the leadership of the AAM, Ceel VanDenBrink, an active program was developed and a network of 27 cooperative observers was established to report observations every morning via telephone to various weather bureau offices from April 1 through October 31. In addition, the AAM provided liaison to university researchers and issued specialized weather advisories directed primarily toward the needs of the growers in the fruit producing areas in the western portion of the lower peninsula.

In the mid-1960's, the federal state climatologist position was established and with it went the directorship of the MWS. Norton Strommen became the first full-time state climatologist for Michigan.

During the next several years, the state climate (SC) and AAM programs continued as cooperative federal programs. The state climatologist strengthened ties with Michigan State University's Departments of Agricultural Engineering and Geography while the AAM became affiliated with the Horticulture Department. The MWS program support was increased through the Michigan Department of Agriculture (MDA). The state supported part-time secretarial position was extended to a full-time position in 1967 and then an assistant state climatologist position was established in 1972. Special lake influence monitoring projects were initiated and expanded computerization of data from both the SC and AAM programs were implemented. In early 1973, the National Oceanic and Atmospheric Administration through reorganization and budgetary reductions abolished the federal positions in the state climate programs. Thus, the direct ties between the state and federal programs were broken and the offices were physically separated in the spring of 1974. During the ensuing years, the federal support for the data collection networks continued but support staff were not replaced and travel funds needed by field technicians to maintain the cooperative observer networks were inadequate. Thus the quality of the data suffered.

During the mid-1970's, near real-time weather data from the AAM program became an essential element in the Integrated Pest Management Program being developed in the Entomology Department at MSU. Many of the pest models were developed utilizing the historical climatological data but needed up-to-date data for near real time assessments and management advisories. The need was so acute that when the NWS reorganized the AAM program into the midwest regional center, a staff specialist position was created jointly in the Departments of Entomology and Agricultural Engineering at MSU. Funding was provided by the Agricultural Experiment Station, the Cooperative Extension Service, a cooperative agreement with the NWS and various research grants. The AAM retired from the NWS and joined the MSU staff and continued his role as liaison for the NWS and the cooperative AWS network. In this role, the number of stations was expanded to approximately 45 and the coverage, though not uniform, included other agricultural areas of both the lower and upper peninsulas.

In late 1980, a cooperative agreement was executed between the College of Agricultural and Natural Resources at MSU and the Michigan Department of Agriculture to more effectively coordinate the two programs. Since implementation of the agreement in 1981, the state climatologist has served as coordinator. Budget constraints, personnel quotas and other limitations have precluded many significant enhancements to the recombined programs, however, some progress has been made. Through the cooperative agreement, an MSU computer programmer and a half-time secretary have been jointly supported in the climatology program. Funding for two graduate student assistants was implemented in FY 85/86 by the MDA. However, the full-time staff support position to the climate program has recently been withdrawn by the MDA.

Within the Agricultural Weather Service (AWS) component, a full-time faculty position was established subsequent to the retirement of the former AAM. The current agricultural meteorologist, Dr. J.D. Carlson, has expanded his cooperative extension role by instituting weekly conference-call briefings to the County Extension offices. These sessions are divided by interest areas into separate days and involve on-campus specialists to interpret the implications of the recent past weather, the forecasts for 1-3 days, plus the 3-5 day and 6-10 day outlooks as interpreted by Dr. Carlson from the NWS products.

Structure of the Cooperative Agreement:

Under the cooperative agreement, the two areas of specialization remain autonomous. Areas of parallel activities are explored to enhance both programs. Data are shared and computer linkages have been proposed to enhance the exchange of digital data. Collocation of the programs has been partially implemented but put on hold for the foreseeable future.

An advisory committee was established to evaluate program priorities and provide end user input. The 15-member committee consisted of: on-campus research, extension and teaching personnel from primary interest departments; a cooperative extension field staff specialist; a horticultural consultant; an AMS certified TV broadcast meteorologists; the head of a consulting meteorologist company; a resource specialist with an environmental consulting firm; a hydrologic engineer with the Michigan Department of Natural Resources; a water resources engineer with the MDA; and the director of a weather and market news program of the Michigan Farm Bureau. The input and differing points of view expressed during the committee meetings were very helpful in identifying areas of need. Unfortunately, the subsequent economic conditions that developed severely delayed implementation of many of the suggestions. The needs have not diminished but the support to meet those needs has been inadequate.

In 1985 an ad hoc program review committee, appointed by the chairpersons of the participating departments, recommended: that a full-time assistant agricultural meteorologist be hired; more computer linkages and delivery systems be developed with a designated data base manager and programming staff person(s); an automated weather station network for the state be implemented with adequate dedicated technical support staff to maintain the equipment; and that the teaching, research, extension and public service components of the program be enhanced. None of these recommendations have been implemented to date.

There is currently an evaluation team comprised of the Associate Directors of the Cooperative Extension Service and the Agricultural Experiment Station as well as the Assistant Director for Programs in the MDA reviewing the organizational structure and funding under the cooperative agreement. Their report and recommendations are due in early 1987.

Cooperation with Federal Programs:

Throughout the rapidly changing events of recent years, the cooperation between the NWS, the National Climatic Data Center (NCDC), the USDA and the state programs has been excellent. The state programs in Michigan would have, in my opinion, ceased to exist without this continuing cooperation.

The same cannot be said for the Department of Commerce's efforts each year to abolish the agricultural weather programs as well as the imposition of severe budget and staffing reductions on the NWS and NCDC. The thousands of dollars and hundreds of hours of staff time spent each year to recover these services through the congressional budgetary process have been a serious drain on already inadequate resources. Stability in monitoring networks and support staff are essential to the continuity of existing programs and to the development of new and innovative applications. A stable basic weather data network to measure agriculturally significant variables is desperately needed.

To Automate or Not to Automate:

Moving into the area of automated weather data (AWD) networks is a very good way to measure variables that have not heretofore been recorded. However, throwing money into "automated" stations without providing adequate technical support staff is very short sighted and almost certain to fail. Unfortunately, in these times of downsizing the number of federal and state employees it is much easier to get money for equipment than it is for staff. Automated networks require regular maintenance, sensor calibration and data monitoring. Some states have developed very successful AWD networks through a coalition of local, state, regional and federal funding. Nebraska is a prime example with an excellent program as part of their system called AGNET. Illinois has a less elegant but very effective system called CLASS. A similar system was developed in Michigan in the mid 1970's by the research and extension personnel in the Entomology Department at MSU in connection with the Pest Management Executive System (PMEX). The lack of dedicated support has caused a very good AWD system to go unused and the prototype stations to fall into disrepair. Individual researchers and research projects maintain their own AWD units but exchange of and access to the data are not an easy straight forward process.

A base network of AWD stations should be installed in the agriculturally significant areas of each state through federal assistance. The states should contribute to this program and be encouraged to augment the station density, areal coverage and variables being measured to address their unique problems. Standardization of data collection and communication techniques would increase the usefulness of the data many times and provide access by the federal, state, local and private users. The development of a prototype program of this nature was proposed by the North Central Regional Climate Center in conjunction with the North Central Regional Research Committee on Weather and Agriculture (NC-94). Once again, the program has not been implemented due to a lack of long term support.

Data Communication:

With the rapid development of high speed computer communication networks, it is becoming more important to standardize the means by which information is exchanged. In addition, options are now becoming available to monitor data bases, extract only the particular information needed and have it in a computer compatible form. It seems a waste of time and resources to transmit information via paper copy which must then be reentered if computer analyses or applications are required. Or, worse yet, have the required data stored in a computer to which no one outside of the host organization has access nor can communicate with due to incompatibilities. A federal communications network, or other computer network, should be made available to cooperating state, local and private data base managers to facilitate the data exchange. The data files could be write protected so that each could read the others files but could not modify them without specific authorization.

The ideas expressed herein are my own. I do not imply a policy or position taken by either of my sponsoring organizations, i.e. MDA and MSU. However, from our mutual ongoing interest in this area, I sincerely hope these ideas contribute to the development of a strong viable agricultural weather and climate program.

Thank you for the opportunity to participate in this important session of this conference.

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THE FUTURE OF AGRICULTURAL METEOROLOGY: A PRIVATE SECTOR PERSPECTIVE

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This paper is intended to provide a brief summary of but one aspect of the future of Agricultural Meteorology, but an aspect that is very important to those of us who are engaged in the private practice of meteorology. This aspect deals with the identification and the delineation of the roles to be played by the three principal sources of Agricultural-Meteorological (AGMET) Services: the governmental (State and Federal) services, the academic community, and the private sector. Most of us within the meteorological community are aware of the gradual evolution and differentiation of these roles, which over the course of the past 100 years, saw the governmental weather forecasting services first develop in the military late in the nineteenth century, then some time later in the Department of Agriculture. At the same time the science itself was advancing in the academic community. The private sector for all practical purposes didn't exist until the end of World War II. The real development of this third segment has occurred during the past 20 years. With the emergence of the private sector as a viable component of the meteorological community, and with a developing consensus among the public at large that the tax burden accruing from the unrestrained growth of the governmental bureaucracy as a whole is not compatible with their well-being, increasing thought is being given to streamlining those government agencies which render such services, portions of which are being, or can be duplicated in the private sector. Specifically, in regard to the National Weather Service, it must be mentioned that movement in this direction has emanated as much from within the government as from without.

With that brief background then, this paper addresses the question of the various future roles to be played by the federal and local governments, academia, and we who comprise the private sector. The thoughts expressed below may not exactly represent the thoughts of all of us who work in this particular segment of our profession, but the author believes it does reflect a majority viewpoint.

A. A Private Sector view of the role of the Federal Government in providing meteorological services.

It is the role of the Federal Government to provide to the public warnings and advisories of weather events hazardous to life and public property. In order to meet these responsibilities the National Weather Service must maintain a full-

time forecast capability which is directly focused on fulfilling this requirement. Although there are some of us in the private sector who believe that the public dissemination of information so developed should be restricted to warnings and severe weather advisories, the author feels that...certainly from a taxpayer's point of view...such a narrow use of such a costly resource would be extremely wasteful. This is because that in order to provide the requisite warnings, data has to be analyzed and forecasts produced on a continuous basis, but most of these products would reflect relatively benign conditions. Thus, it makes economic sense that these forecasts too should be made available to the general public. The key proviso here is that such forecasts be of general public interest and not designed and focused toward a small segment of the public to be used to foster a competitive advantage.

This philosophical generality creates many gray areas, some of which are pertinent to agriculture. To many of us in the private sector, statewide forecasts of mainly agricultural interest may be appropriate for the major farmbelts. More specific forecasts reduced to the areal size of crop reporting districts may be acceptable as well, but when what should be general forecasts are detailed down to about the size of individual counties, their justification under the criteria outlined above becomes downright questionable.

Between the opponents and proponents of a smaller role for the Federal Government in providing specialized forecasts, a particular AGMET product that has been discussed at great length is the fruit-frost forecast. The National Weather Service has several groups of well qualified and talented meteorologists providing this specialized service in frost or freeze-prone portions of the country. The problem from an operational and cost/benefit standpoint is that such a forecast product is only required for a few months during each year; and even then, directly applies to only a small percentage of the general public living in those areas. What can one do with these specialists during the balance of each year that would provide an equivalent cost/benefit return to these communities? The Federal Government has considerable problems with the engagement of Civil Service employees on a part-time basis. On the other hand, the management of this short-term type of operation is well suited to the private sector. The substitution of privately employed meteorologists for their federally employed counterparts would be largely transparent to those agricultural producers in need of such detailed temperature information. They would continue to receive the forecasts, in most cases thru the same channels they now use...TV, radio, or telephone recordings, and in most instances, with no direct increase in costs to themselves. After all, a factor that most people may not have considered is that almost all of the National Weather Service information the public now receives is communicated to them by private (non-government) agencies...radio, television, newspapers, etc.

What does the private sector consider to be the role of the Federal Government in meteorology? As a general rule, an appropriate operation for the Federal Weather Services is one which can satisfy the following criteria:

The operation must be one that either provides information that routinely serves a large and significant segment of the general public, or one that is vital to national security, or one that is designated to fulfill obligations specified in international treaties or agreements.

Such an operation should not duplicate or replace one which private enterprise now provides, or is able and willing to provide with at least comparable proficiency.

One of the most important of these services involves the basic raw material of all meteorological products...data. The private sector believes that a primary responsibility of the National Weather Service is the management of a comprehensive meteorological database. This function involves the acquisition, storage and the timely availability of such a data resource. Much of this requirement has already been met, but much more is needed. Considerable masses of data now being generated or acquired by other federal agencies as well as non-proprietary data produced by reliable public and private sources does not now find its way into the national database. On the other hand, data that is being stored is often of poor or questionable quality or unreliable. A much better program for the oversight of such data is badly needed.

Other services appropriate for the Federal Government involve those whose scope or cost are generally beyond the resources of the private sector. These include the acquisition and implementation of meteorological satellites, the management and operation of sophisticated data acquisition systems such as NEXRAD, profilers and automated weather stations in remote land or ocean areas, and the operation of state of the art high-speed computer systems to manage, process and disseminate data and numerically derived forecast products.

Focusing more specifically on the topic of agricultural meteorology, one example of a federally produced product which fulfills the criteria cited above, happens to be produced right here in the South Building. It is the Weekly Weather And Crop Bulletin published by the NOAA/USDA Joint Agricultural Weather Facility. We think it is one of the most information-rich, timely and readable sources of agricultural weather information available from any agency, federal or private.

B. A Private Sector view of the role of Academia in providing Agricultural Meteorological Services.

The knowledge, tools and techniques which will make up the future of agricultural meteorology will probably emanate from the colleges and universities. An improved understanding of the phenology of crops will be developed there, not only for those crops which are currently under cultivation on farms and in our present meteorological environment, but for future generations of hybridized or genetically manipulated crops which may be grown under similar conditions or perhaps significantly different environments. Some of these differences will result from the need to utilize land areas not now hospitable to presently grown varieties. Some of the environmental differences may be the result of a change in climate. And finally, some of the changes may be the result of the need to grow food in an artificially created environment to allow men to survive as they explore outer, or inner (ocean-floor) space.

Other developments in academia will include the development of sophisticated crop management programs, programs which maximize yield and production while minimizing the costs of production. These will take into account a spectrum of variables from soils, to fertilizers to pesticides, to chemical growth regulators and defoliants, and of course to weather, all incorporated into a PC-based and A/I

driven computer program.

The private meteorologist views these developments not only with eager anticipation, but also, with a slight bit of apprehension. The role of the development of these techniques rests principally with the universities and the not-for-profit research establishments, institutions whose charters allow them the luxury of searching for truth without the onus of having to render this search on a financially rewarding basis.

By this time it should be pretty obvious where we are coming from. Although the conception and field-testing of these developments are likely to fall within the role of academia, and properly so, the operational or full-scale implementation of these new systems should be within the province of the appropriate industrial establishments. That portion of the operation involving the acquisition of real-time weather information could be provided in several ways...by on-site observational equipment, or off-site information services company, or even possibly a meteorologist. More specific or detailed weather data, be it past, present, or forecast information should be provided by a meteorologist.

C. A Private Sector view of the role of the Private Sector in providing agricultural meteorological services.

The recent expansion of the private sector in the field of agricultural meteorology has paralleled the growth of many other service organizations in our increasingly service-oriented society. This growth is a result of some very real benefits which are not routinely available from the more traditional public sources of weather information. The role of the private sector meteorologist can best be described by providing a listing of some of these advantages along with a brief description of their applications. This listing is as follows:

1. Consultation...no matter how comprehensive a meteorological transmission may appear to be, there is almost always some question, clarification or further detail that needs to be resolved, especially if the subscriber has to take some action based on this transmission. The ability to consult directly with the meteorologist providing the information is the single most appreciated service offered by the private sector meteorologist.
2. Confidentiality...many firms engaged in agribusiness use current and forecast information on a regular basis. In the competitive business environment, they need to know that the questions they ask, as well as the answers they receive will remain confidential within the consultant/client relationship.
3. Specificity...forecasts and other meteorologically related data offered by private sector meteorologists can be...and most often are...tailored to specific locations, and for specific times or periods of time. Thus, the content and coverage of such information has more relevance and immediacy than most generalized public forecasts.
4. Alternatives...various scenarios, rather than a single or compromise solution can be offered for complex situations, or for periods which are beyond the time frame of more precise forecasts. There is no need to provide only a "path of least regret" type of forecast of the kind often issued by the National Weather Service when forecasting potentially severe weather events aimed at the general

public.

5. Dedicated facilities...high volume subscribers, or those whose response to updated weather information must be immediate, frequently employ a dedicated communication channel to receive meteorological data as soon as it becomes apparent to a forecaster, or as soon as it is observed. This allows a subscriber to know immediately when, for example, radar or satellite pictures detect a developing line of showers in, or approaching an agricultural region which is experiencing drought, an event which may prompt the subscriber to take action in the marketplace.

6. Global coverage...private forecasters are not constrained to operate within national boundaries, or restrained by political protocols to confine their weather data and forecast information to limited geographic areas. As a result, many private sector agricultural meteorologists provide information on a world-wide basis. Because the United States is one of relatively few countries in the world that considers weather information to be public property, even when the information is generated within the Federal Government, private meteorologists in the U.S. are able to describe in detail and to provide independently developed weather forecast information for most areas of the world.

7. Interdisciplinary approaches...private sector information services can combine the expertise of several disciplines to provide an integrated solution to complex problems. A private agricultural weather service may employ the expertise of a meteorologist, agronomist, plant pathologist and agri-economist to solve complex problems for producers from planting to marketing.

In the future, private weather services will continue to provide the type of services described above. They will look to the universities and to federal and privately sponsored research facilities for new techniques in forecasting, and for improvements in methods for determining crop yield/weather relationships. They will continue to rely upon the federal meteorological services for data and sophisticated computer forecast products, although in most cases the detailed operational forecasts they provide to their clients will continue to be their own. Only occasionally, and then usually because of specific requests from a client, is an actual or slightly massaged version of the National Weather Service product used. However, even if the private services were to do little more than redistribute the NWS products, they would still provide the advantages of timeliness, direct contact, discussion of alternative scenarios, and at the very least, a second opinion to the public forecasts. All of this provides a significant value-added package to their subscribers for assessing the domestic weather/crop relationships. On the international scene, for potential clients who have to work in a real-time environment, there is at this time, and from what we can see of the immediate future, no comparable alternative to the weather services available from the private sector.

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BIOTECHNOLOGY FOR AGRICULTURE: FEDERAL RESEARCH IN PLANT SCIENCES

Dr. Gerald G. Still
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I am very pleased to have this opportunity to share my thinking with you on this auspicious occasion.

As we know, nearly all of our food comes from only 12 to 15 crop plants; about 90 percent of the caloric intake of the human population is from only 5 cereal crops, 3 tuber crops, 2 sugar crops, and several legumes. Cereal crops alone account for about 70 percent of our food, with wheat and rice, by far, the most important food cereals. These 2-5 cereal crops literally stand between mankind and starvation. And, as important as these 12 to 15 major crops are to our world's economic stability and to the world's political stability, society and its institutions cannot yet completely insure increasing the productivity and quality of these basic human staples.

We have come far, but there is more to be done. You who are plant breeders, pathologists, and agronomists, and your colleagues around the world, have every right to be proud of the job that has been done. With the tools available, it has been a magnificent job. Germplasm has been selected, manipulated, kneaded into an agronomic system that allows farmers to recover an ever-increasing percentage of the potential yield residing in our crop plants. Through genetics and breeding, high-yielding varieties have been released. They possess the myriad traits required in the field. The crop culture and management system seeks to optimize water in relation to nitrogen and other nutrients, while constantly striving to reduce soil erosion and environmental pollution. Through the use of an increasing arsenal of plant protection techniques, this yield potential is protected by removing the deleterious vectors of weeds, insects, and pathogens.

Now, the challenge before us is this: Where do we go from here to meet the minimum needs to ensure increased productivity and the quality of the 12 to 15 crops basic to human survival? Where are those new tools that will produce the quantum leaps that the introduction of nitrogen fertilizer did? How do we look more critically and select more carefully in the important areas of product quality and the numerous characteristics that make the harvestable products useful to man and his commerce? Are there opportunities to develop an agricultural product whose final use is not a stomach, but rather an industrial feed stock?

Agriculture is on the verge of a new era---spawned from enormous investments in physical science from 1957, through the 1960's and into the early 1970's, in what has become known as the "post-Sputnik Physical Science Revolution." As a result of this investment, we are now on the edge of a "Biological Revolution" which will touch all human endeavors and impact the human condition. The scope is enormous--ranging from plant and animal agriculture to human medicine. Already society is responding to the moral and technological impact of the application of the products of the emerging "Biological Revolution." The press has dubbed the first phase of this revolution the "Genetic Engineering" or "Biotechnology" revolution. What is biotechnology? It is the application of physical and biological sciences to provide the knowledge and the ability to manipulate living things through their informational molecules. It is knowledge of the very molecules that make us and the living things about us what they are, and how to regulate these molecules. The nucleic acids, proteins, carbohydrates, and lipids all translate information to various levels of the biological system--subcellular, cellular, organic, whole body, and even community. The behavior of insects is the result of informational lipids whose three-dimensional structures are discrete and specific to the organism and its behavior---karomones and pheromones. Mammals respond in careful orchestration to the progress of life through a multiplicity of interactions of proteins that provide discrete information and function. The plant world, as with all biology, responds in concert to exogenous and endogenous cues through informational molecules from nucleic acids through yet-to-be-determined micro and macro molecules. The new frontiers for agriculture will be the application of informational molecules for bioregulation of field crops and livestock. What is agriculture other than regulating and optimizing the biological system for food, fiber, and feedstock? Agriculture is the application of biological and physical science for our survival and for the profit of those farmers who provide this service for society. The future of agriculture resides in our ability to optimize the use of the informational molecules in agricultural crop plants.

Industry has been a forerunner in this field. Whether it be through plant nutrition or regulation by selective herbicides, plant growth regulators, or biological control materials, it is the application of specific molecular architecture that elicits a specific biological response. These responses are useful in the overall agricultural scheme--whether it be crop production or product protection at the pre- or post-harvest phases of the process.

Farmers have always carried all the risks of weather and of plant disease, weeds, and insect pests. Some of these burdens have been eased. Farmers currently can exert some control by using agrochemicals. The advantage to farmers could be much greater if they had at their disposal an arsenal of exogenous chemical cues that will give the producers and processors alternatives in producing and preparing the agricultural product for commerce.

Why not develop technology so farmers could control the timing of the termination of the vegetative phase of growth and the initiation of the reproductive growth? Why not develop technology to manage the translocation of nutrients in concert with weather and flowering? Why not manage senescence? -- If moisture and weather conditions were favorable, maintaining vegetative or reproductive metabolism one or two weeks in relation to the individual crop year could have profound effects on yield and quality. Why not provide the technology to allow control of seed dormancy? Why not provide a technology that may regulate post-harvest metabolism in order to preserve or create greater quality of the agricultural product for commerce? Each of these proposals comes under the purview of biotechnology for agriculture.

We are also on the threshold of a new era for agriculture which I believe will have as great an impact as the milestones that I have described earlier. Biotechnology is in its infancy. The pursuit of understanding of informational molecules and how they interact at the molecular, cellular, tissue, organ, and whole system level is a yet-to-be-explored frontier. This is the future of agribusiness, the chemical industry, and agriculture.

In recent years biotechnology has caught the imagination of the press and the public. The expectations for results have been enormous, while our experience is small. The dreams of entrepreneurs have swelled beyond the realities of the science and markets. There is no question that the future for the application and commercialization of informational molecules has an enormous potential. The reality is that the timelines have been unrealistic. The anticipated application of the technology has outstripped the fundamental laboratory's capability of providing the foundation from which the technology will evolve. Our dreams for the application of informational molecules that will orchestrate the biological process for commerce are valid. However, the investment of human and capital resources to understand the intricacies of these codes---the interrelationships between the words, sentences, and paragraphs---have yet to be worked out.

In order to convert these dreams into reality, I see ahead a four-part imperative: We must educate, investigate, automate, and facilitate those dreams through an enlightened public and private policy. How well we succeed in each of these broad areas---even more than specific achievements in the informational molecule field---will directly affect our economic vitality, national security, personal happiness and well-being, far into the next century.

The connection between informational molecules and the first imperative--education--is obvious. The task of education expands far beyond training Ph.D. students and must impact upon the educational preparation of the biological and physical scientists addressing these fields---from the most fundamental to the most applied. This is particularly important when addressing the social policy issue of regulation of informational molecules in science, commerce, and in the environment.

An educated workforce makes possible the second imperative: To investigate---to discover and advance the technology that has been our country's strongest competitive advantage. Economists estimate that during the past two decades, technological advances have contributed almost 40 percent of the increase of our gross national product, and we have not yet reached the limits of such gains. The full promise of advanced technology cannot be realized, however, without a continuing commitment to investigate---including the commitment to basic research upon which fundamental breakthroughs so often depend. Direct economic pay-offs of fundamental research are not always obvious, and are usually long-term. Yet, excellence in basic research is essential, not only for competitive advantage in the coming decade, but also for continuing strength in the next century.

Technological superiority, no matter how substantial, can never be taken for granted. The application of new technology, almost by definition, diminishes its value in competitiveness. The diffusion of technology can be stemmed partially and temporarily by enforcement and strengthening of the laws regarding intellectual property, but the only long-term assurance of technological superiority is to stay on the leading edge.

Our third challenge--automation--is imperative because nowhere is there a greater need for application of the new technologies of information automation than in the field of biotechnology. In the words of John Nesbitt, "We are drowning in information and starving for knowledge." The most modern automated informational systems must be brought to bear on the biotechnology for agriculture. The myriad traits, characters, and quality requirements that the plant breeder and geneticist are faced with are all biologically managed by informational molecules. If, in fact, technological superiority is to be achieved, automated information systems must be created, applied, and must evolve simultaneously with the growth and application of biotechnology. Genetics is a science of large numbers of traits, characters, and individuals. Tools must evolve that will fit the hands of plant breeders and geneticists to allow them to apply biotechnology to their problems. In great part, information automation will be that tool.

The fourth challenge before us is to facilitate these important and positive initiatives into a coherent public and private policy---one that recognizes the link between an educated workforce and productive R&D; between R&D and capital investment; between both of these and tax policy; between tax policy and trade policy; between trade policy and fiscal and monetary policy; and between all of these policies and competitive positions and global markets.

The task of development of biotechnology for agriculture is daunting in its scope, but it is vital to our future. At stake is not only international prestige, but survival--not only our standard of living, but also our national security and the quality of our life. The impact of a healthy and productive world agriculture demands the most single-minded focus, the most zealous efforts, and the finest of dedicated commitment. But, it is not

beyond our reach. If we act quickly, decisively, and effectively, we--the world community--will develop biotechnology for agriculture--design agricultural products for value-added markets, increase efficiencies in production and processing, and minimize the degradation of our globe's non-renewable resources. And, we will not forget that 2 to 5 cereal crops stand between man and starvation, and that we must be grateful stewards of the 12 to 15 major crops that support our way of life.

Indeed, the issue before us is the future of agriculture. Through informational molecules, let us lay the foundation with today's experiences to realize tomorrow's expectations.

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TECHNOLOGY AND FARM PROFITABILITY AND PRODUCTIVITY

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OVERVIEW

We are now in an era of excitement over new biotechnologies. We hear of up to 40 per cent increases in milk production with bovine growth hormone, cows the size of elephants, reductions in unit costs for farmers who are facing severe income and financial problems, and improved product and dietary quality both for export and domestic markets.

There is another side to this picture typified by a quote from a current radio commercial: "Technology is both a willing servant and a stern master." In many ways this phrase characterizes the dilemma that we face in dealing with the economics of technological advance. New technologies enhance productivity and are the "willing servants" in the production process. But if demand is not growing as rapidly as productivity, the substitution of new information and new knowledge for land and labor inputs will be required, making technology a "stern master."

Why, in an era of no land, labor, or machinery shortage in agriculture, or alternatively, of significant excess capacity and surplus production, do we invest in research? This important question is frequently raised and needs to be addressed. First there are tremendous lags, typically from one to three decades, between research investment and increased productivity. If we are considering biotechnologies, it may be the turn of the century before major breakthroughs have an impact in the marketplace. Excess capacity problems are short term problems largely created by a series of domestic and international policies, some designed to cushion the adjustments taking place in the agricultural sector. So we are trying to address two different problems. Excess capacity requires short term policy initiatives, while research investments with payoffs far into the future require a long term perspective. A third important issue is the globalization of agriculture or how agricultural trade is changing the rules of the game. Increased productivity is essential if we are going to maintain a competitive position in international markets. Without productivity growth, the American farmer is going to be a loser and we may not even be able to compete in our domestic markets for agricultural products without protection.

Given this background, four questions will be addressed. How are technology, productivity, and profitability related? How have agricultural output, inputs, and productivity changed over time? What research is needed on the socioeconomic impacts of new technologies? And, what are the implications for future technology research? The focus will be primarily on agricultural production with little attention beyond the farm gate.

TECHNOLOGY, PRODUCTIVITY, AND PROFITABILITY

I am not quite sure why the third "and" crept into the title; possibly because these issues are not as directly related as sometimes assumed. New technologies, if profitable, are incorporated into the production process. When these technologies are incorporated into the production process, they increase productivity. Increased productivity is defined as producing the same amount of output with less inputs, or producing more output with the same amount of inputs. Alternatively, increased productivity results in lower per unit production costs.

It is important to distinguish between total productivity and partial productivity. It is tempting to look at the tremendous productivity gains that have accrued to particular production inputs. In the last 50 years agricultural labor productivity, or the output per hour of labor, has increased about 12-fold, while land productivity has increased about two and one-half times. But what is more important from an economic point of view is the increase in output per unit of total inputs going into agricultural production. Total input use has not increased significantly in the last 50 years--only about 5 percent. What is equally important and more dramatic is the tremendous adjustments that have taken place in the input mix. U.S. agriculture has experienced an 80 percent decrease in the amount of labor used, a 1300 percent increase in the quantity of agricultural chemicals, and no change in the land base. So while the total input package is largely unchanged, a 225 percent increase in total factor productivity has occurred over that period. We have more than doubled output, holding total inputs nearly constant.

How do changes in productivity relate to profitability? That is a more complex question. Typically, the initial or first users of a new technology definitely gain through increased profits. As these farmers increase their output per unit of total input, their costs decrease relative to other producers, and in turn, their profits increase relative to other producers. But after widespread adoption of the new technology, what are the impacts? If farmers producing this commodity rely mainly on the domestic market, which is relatively unresponsive to falling prices for agricultural commodities, the increased productivity leads to falling overall profits. This reduced profitability falls especially hard on the late adopters, who may even leave farming as a result of reduced overall profits in the sector.

There is a new scenario, however, which has become much more important since the 1970's. In addition to the domestic market, producers may also rely on international demand, which is more responsive to changes in price, or the volume of exports may increase more than the drop in price. With global

markets for agricultural products and a higher level of price responsiveness, U.S. farmers can improve their competitive position by adopting new technologies. Not only will the initial or early adopters benefit, but the late adopters may also share in an overall increase in profits. As long as the international markets are more price responsive than domestic markets, fewer producers will be displaced by new technologies than in the past. Yet, some farmers may quit because they do not have the necessary mix of knowledge and management skills to remain competitive given new technologies in the input mix.

A couple of important caveats need to be mentioned. First, new technologies have not necessarily forced farmers out of agriculture. Many individuals have sought more financially rewarding employment opportunities outside farming. Second, farm programs may be sending inaccurate signals to farmers on what new technologies to adopt. For instance, we create "artificial land scarcity" by set-aside and other programs that restrict the amount of cropland in production. That constraint sends a signal to the research community, or induces yield-increasing varieties to be developed. Increased yields will tend to aggravate our farm surplus situation and encourage further set-asides and storage. Such program actions send distorted signals to the research community and the marketplace regarding the technologies that are needed. Also, such programs maintain excess capacity and may send inappropriate signals for future research and development. Third, profits or benefits from new technologies may and frequently do accrue to individuals other than farmers. The firms that develop and market such technologies, expect to gain in that process or they would not undertake the investments. But more importantly, consumers have been the principal beneficiaries of past technological developments in the agricultural sector because of a lower priced, more varied, and improved quality food supply.

NEEDED RESEARCH THRUSTS

What are the needed socioeconomic research thrusts? The important gaps in our knowledge of the magnitude and distributions of benefits and adjustment costs, as well as the need to develop an appropriate research policy is determining our research focus. I will concentrate on (1) work that is underway or being initiated and (2) aggregate or national implications.

First, we need to evaluate the implications of new technologies for the U.S. competitive position in international markets. Our competitive position may be improved by making less costly U.S. farm products or by improvements in quality. For example, we need to assess the potential of new wheat varieties to be adopted in the U.S. as well as in competitor countries like France, Argentina, Canada, and Australia. If new technologies are produced, adoption in a specific country will depend on the nature of the technologies and on the resource situation of that specific country. If the farmers in the United States are adorned with a more plentiful supply of land and human capital, they will adopt different sets of technologies than producers in France where land is more scarce and the level of educational attainment is different.

Second, what will be the impact of such new technologies on the United States competitive position? If U.S. farmers do or do not adopt them, it will have an important impact on the competitive position of American products in world markets. Public policies might be used to encourage the development of technologies that improve the competitive position of U.S. farmers? Given the human, natural, and financial resources available to U.S. farmers, particular technologies will complement their situation. In addition to identifying the types of technologies that are needed, research policies may be used to encourage their development.

A major concern is arising over the location of firms involved in biotechnology research and the locational impact on the types of technologies developed. Serious concerns have been raised about the regulatory process for new biotechnologies in the United States. European countries are providing incentives for biotechnology firms to locate abroad. If biotechnology firms locate in Europe, will they develop new technologies more appropriate to the European agricultural situation than to that of the United States? If so, technologies available to United States farmers in the future will be affected as will our ability to compete in international markets.

Third, further research is needed on the potential impacts of new technologies on the environment and people. Beyond their immediate impacts on productivity, new technologies offer both external benefits and costs. Many of the new biotechnologies have raised public concern due to gene manipulation and transfer, chemical and hormone use, and potential environmental risk. Necessary human and environmental safeguards need to be introduced for testing, developing, and introducing these new technologies. It is also critical that the monitoring and approval system be both effective and efficient. Cumbersome systems may impose greater costs on the public than the benefits realized by an inefficient process.

There is another, frequently overlooked, side to the environmental issue. Since the 1920's, both cotton and corn yields have increased about 400 percent, wheat close to 300 percent, and soybeans 250 percent. Today, we have 55 million acres less cotton and corn than we had in the 1920's. Without technological progress and yield growth, we would probably be cropping the hills of New England today, and facing more serious erosion and soil depletion problems.

Also, these new technologies may offer direct improvements in environmental quality. For example, biological resistance to pests will reduce the use of agricultural chemicals and some of the potential environmental and human health hazards. When nitrogen fixation in corn and other crops is achieved, or improved nitrogen fixation in legume crops is realized, the problems of ground and surface water contamination may be reduced significantly. Improved information technologies, such as integrated pest management, will usually reduce pesticide use. Other technologies like herbicide resistance in plants could conceivably lead to more chemical use although it is difficult to anticipate potential changes in environmental risk.

Fourth, without further research it is safe to conclude that the use of new technologies to solve the current farm income and financial problems will only happen coincidentally. Tremendous lags exist between research investments and new technologies. There are definitely gains that the intital adopters are going to realize from new technologies currently coming on line, but the adoption of such technologies cannot be expected to significantly alleviate income and financial problems.

Another profit-related issue is cost-reducing vs. yield-increasing technologies. By cost-reducing technologies, I mean technologies that don't lead to an increase in yield or output per unit, but essentially reduce the cost by introducing a new technological process. The yield-increasing technologies are those that lead to an increase in yield due to the introduction of the new technology. Economists have long argued that the yield-increasing technologies have the same impact as the cost-reducing technologies. Generally, that is true. But, if land is a constraining input, situations may exist where the cost-reducing types of technologies offer increased benefits over the yield-increasing types of technologies. An interesting case for further study would be conservation tillage. In the Corn Belt, for example, yield decreases are frequently associated with adoption of conservation tillage but more sifnificant cost reductions offset the yield loss. At the present time land is only a constraint to the extent that farm programs reduce its availability.

Finally, further research is needed on the impacts of new technologies on farmers, consumers, and the general public. We are in a new era and need to reassess the potential benefits and costs of new technologies as well as the distribution of benefits and costs. Because the new technologies are largely genetic- and information-based, which are different than the mechanical and chemical technologies of the past, improved information is needed on the distributional impacts of new technologies between farmers, between regions, and between countries, especially since we are now competing in international markets. For example, bovine growth hormone presents an interesting case. Not only are farmers going to be affected within a region, but the Great Lake States will be affected differently than the Northeast, and those States relative to the Southwest and Florida. We need to anticipate the forthcoming adjustments to better respond to them. Only by doing anticipatory research can we help design policies to make the transition as easy as possible. The impacts of these new technologies need to be evaluated under different export and farm program situations. Export promotions and farm programs are going to have a major impact on the effects of different technologies, and the linkages need to be considered in policy formation.

The impacts on rural America, rural services, institutions, people and their welfare, migration, agribusinesses, and farm structure need to be addressed. Two years ago three new movies were released--Country, The River, and Places in the Heart. They were heart-wrenching movies, especially if you grew up on a farm like most of us did. Not only did they point out the adjustments taking place in rural areas, but also the transitory costs that go along with these adjustments. Further attention needs to be directed to these

adjustments and to evaluating alternatives for assisting individuals who are caught in the transition.

IMPLICATIONS FOR FUTURE RESEARCH

What are the implications for technology research? The U.S. agricultural sector can be more competitive in international markets with continued technology research, but a better understanding of what technologies are important to our competitive position is needed. The public stands to gain from lower food prices and potential environmental quality improvements. New technologies must be carefully monitored to avoid adverse consequences, but the monitoring must be accomplished through an efficient regulatory system. Early adopters at the farm, region, and country levels will gain in the short run. All U.S. farmers may gain if U.S. farm products become more competitive in international markets and international demand is price responsive. When the new sources and types of technologies are combined with the changing characteristics of farms and farmers, there is a need to rethink both our research and farm policies.

In a sense, we have a tiger by the tail; that tiger is technology. Do we try to stop it? Or do we try to direct that tiger to strengthen our position in international markets and improve the economic status of U.S. agriculture, while developing policies and programs that give people the opportunity to make adjustments to the consequences? Our capacity to develop and manage technology consistent with our stock of natural, human, and financial resources is the most important factor in determining if we have a strong farm economy in the future that can compete in satisfying both domestic and world demands.

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RESEARCH THRUSTS: AN INDUSTRY PERSPECTIVE

by

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The aim of agricultural research is to make American farming a more profitable, reliable and durable business, able to compete in both domestic and world markets. Unless that happens, the American farmer, the industries and institutions that serve American agriculture -- the USDA, the land-grant universities, the Monsantos, the Pioneer Hi-Breds and the Mycogens -- will not have markets for their goods and services.

I shall outline what I believe are major research thrusts that we need, to secure a more attractive agricultural future.

I recognize, as do all of you, that only some of the problems facing American agriculture will be solved by technological innovations like biotechnology or computers. Yet I hope to present evidence that technological innovations are crucial to enable the American farmer to compete in the world's agricultural market place for both U.S. and world wide markets, and are crucial to enable the nation to realize the economic potential of plants and livestock as annually renewable sources of wealth. The efficient and profitable production of agricultural goods must remain a durable core industry in America.

In this brief paper I will focus on some of the research thrusts presently underway in the industries that serve agriculture. But I hasten to add that while these technological innovations are crucial to enhance the efficiency of U. S. agricultural production, they will not revitalize America's agriculture unless farm business management, farm policy, USDA, land-grant universities, extension services and the many private-sector businesses that serve agriculture, are also innovative. We need innovative new partnerships between research universities, industry and government to ensure the rapid application of new science to agriculture. We need innovative teaching of 21st century precision agriculture by both the research universities and the extension service. We especially need an inno-

vative farm policy to enable American agriculture to adjust to the changes caused by national and international economic forces. And we need innovative institutions to help protect the income of farm people from the costs resulting from the integration of U.S. agriculture into world markets.

Let me begin with some of the key driving forces behind agricultural research and identify areas of research where companies like Monsanto are making major research investments for the future:

- Increased efficiency of production
- Environmentally-friendly crop chemicals
- Drive for crop quality

There are other driving forces such as efficiency of land use and replenishing ground water, but these three are a reasonable challenge for a brief paper.

Increased Efficiency of Production

To compete in world markets with developing countries with cheap labor and cheap land, and with developed countries that have sophisticated technology, American farmers will have to reduce the real costs of producing their crops. Our emphasis for several decades was in quantity of production -- yield -- with much less thought given to efficiency of production. Today we need technologies focused on efficiency, on reducing the cost per unit output produced, in contrast to the maximum production scenarios of the 1960's and 70's.

Since the early 1900's, U.S. farmers have relied on ever bigger machines and more chemicals to enlarge their crops -- and income. But the new trend is toward "precision agriculture". More and more successful farmers will aggressively adopt new technologies to reduce the real costs of production. The economic incentive to lower input costs will also lower the input of chemicals into agriculture as well as the amount of tillage.

We will certainly see technologies to reduce the need for fertilizers which are one of the highest input costs. Slow- and controlled-release fertilizers will be developed for major crops. We may also see the application of genetically-engineered root-colonizing and soil microbes to provide part of the fertilizer need.

We will see a variety of technologies to reduce field operations. Reduced till and no-till farming will grow with the development of more efficient herbicides, fungicides and insecti-

cides and more efficient formulations and delivery systems for crop chemicals and seeds.

We will see improved water management and innovative approaches to erosion.

Biotechnology

Biotechnology promises to have an enormous impact on crop production. Plant breeding has already provided plants with resistance to major diseases, to some insect pests, and with enhanced yields. But genetic engineers can rapidly accelerate plant breeding and offer new ways to protect crops and enhance yields, to make crops hardier and less dependent on the input of chemicals, fertilizer and the energy needed for tilling. Genetic engineers provide new tools with which the plant breeder can significantly enhance the efficiency of crop production, to make farming more reliable and more profitable.

Since 1983, when my colleagues at Monsanto originally developed the capability of plant transformation for petunia and tobacco, over a dozen vegetable and commercial crop plants have been transformed in various laboratories. In the next 5-7 years, genetic engineers will have conferred commercially desirable properties, such as resistance to pests, to pathogens, to stress and to herbicides, on many major crops including soybeans, rice, corn, wheat, canola, sorghum, cotton and alfalfa.

We have genetically engineered plants to resist insects, to resist viruses, and to resist Roundup® herbicide -- glyphosate.

In the case of insect resistance, we have made tomatoes and related crops resistant to caterpillar pests. There are promising ways to make them resistant to other insects as well. The potential advantages to the farmer are manifold. For example, when we have genetically engineered cotton to resist both caterpillars like the pink bollworm and beetles like the bollweevil, we will dramatically impact the growing of cotton. No longer will cotton farmers have to spray their fields six or more times each growing season with a conventional insecticide. The input cost savings should be large and the environmental consequences attractive.

The greatest potential of biotechnology for short-term productivity gains which will impact the American farmer's bottom line are herbicide-resistant crops. Seed companies have been breeding crops for herbicide resistance for several decades. Genetic engineering permits the rapid acceleration of such breeding programs. Within a decade crops resistant to more effective, less expensive and more environmentally-friendly herbicides will be widely used by farmers.

Researchers have already genetically engineered several crops to have resistance to Roundup® -- glyphosate -- which is an effective, broad spectrum, environmentally-friendly herbicide. There are numerous cases in which glyphosate-resistant crops can result in substantially lower weed control costs.

I suspect that in future we will see vastly increased development and use of environmentally-friendly broad spectrum herbicides like Roundup® with little built-in crop selectivity. Crop selectivity will be achieved by genetically engineering resistance into crops.

The process of genetically transforming plants has become much more rapid so that many major crop varieties can be effectively transformed for herbicide resistance. These herbicide-resistant crops will provide farmers not only increases in productivity but also provide important opportunities for new crops and new rotations where weed-control problems had previously prevented crop changes.

In addition to pest and herbicide resistance, within ten years I foresee the attractive prospect of developing crops that are more tolerant of heat, frost, and other stresses. Hardier crops with these performance features would certainly increase the reliability and efficiency of crop production. They will also extend the geographical range of crops and provide farmers with wider crop choices. I do not promise orange groves in Iowa, but some of the changes could be pretty dramatic!

Another attractive prospect of genetic engineering is to help halt the decline in the genetic diversity of crops which makes most modern agriculture vulnerable to attack by rapidly evolving plant disease and pest organisms. While traditional breeding often narrows the genetic variability of a crop species, genetic engineering has the potential to bring much greater diversity to crops. Virtually any desirable trait -- whether found in a bacterium, a weed or even an animal -- may now be used to improve plants. During the next two decades genetic engineering will provide the plant breeder with a precise and powerful tool to create new germ plasm, to quickly introduce important new diversity into key crops and ultimately to introduce new crops.

Biotechnology can be the instrument of another "green revolution". It has the potential to bring about major, previously unachievable advances in crop productivity and quality. It also promises to increase genetic diversity and make crops hardier, less subject to pests, disease, stress and bad weather,

Information Technology

Innovations in information technology will also have a major impact on the business of crop production. Farmers need infor-

mation tools to enhance productive efficiency and to be economically successful. Computer systems will become increasingly user-friendly. Information technology will become widespread in the office and in the field as farmers integrate computers into their overall operations. Agriculture will become high precision in field management, in marketing and in financial management. Initially I see a larger role for crop consultants, but I suspect more and more farmer/businessman will come to use artificial intelligence systems that mimic the logic of experts to provide expert advice and to hone their management skills.

Environmentally-friendly Products

Environmentally-friendly products will be a key thrust, especially when they can make a producer more efficient. We will see increased development and use of environmentally-friendly crop chemicals and related products. Breakthroughs in weed control, like glyphosate and herbicides like the sulfonylureas and imidazolinones which need to be applied in grams/acre instead of pounds/acre, will come into increased use. These products are safe for humans and wildlife because fish, insects and mammals (including humans) lack the biochemical pathways upon which the herbicides work.

I also expect increased development of new fast-acting post-emergence herbicides which are broken down rapidly in the soil.

We will see the introduction of new formulation systems which target a crop chemical to its target, require smaller amounts of chemical and protect non-target organisms. We will see more and more delivery systems changed to closed containers, avoiding all mixing operations that expose crop protection chemicals to humans. There will be no direct contact of the applicator or farm worker with the product.

The ultimate in environmental friendliness will be crops that have been genetically engineered with natural defenses against pests and diseases which I mentioned a moment ago, and new generations of microbial crop protection products and enhancers of productive efficiency like Bacillus thuringiensis protein or B.t. (Dipel®, Thuricide®).

My colleagues at Monsanto have been able to transfer a gene for a naturally-occurring insecticide, called Bacillus thuringiensis protein or B.t. from one soil microbe into another microbe which lives in natural association with the roots of plants. The object of the research is to provide a natural protection for the roots against certain insects which feed on them. A strategy such as this has tremendous potential . . . and minimal environmental impact.

Unhappily, Monsanto has not been given clearance to field test its new microbial crop protection system, although these genetically-engineered microbes, like the genetically-engineered crops, pose no unprecedented or unique environmental concerns.

I also believe that the uses of biotechnology in agriculture which I have described can play a vital role in restoring the durable productivity, the tilth, of our soils, and enhancing the quality of our ground water.

Drive for Quality

Another major trend of the modern precision farmer will be a drive for quality. In order to stay ahead of mass production in less developed countries, American and European farmers will seek to differentiate their products through superior quality:

- Higher protein producing plants.
- Oil crops that produce better-quality, less saturated edible oils, specialty oils in higher yields.
- Wheat crops with better baking qualities and barley crops with better brewing qualities.
- Feed crops with higher nutritional values and better digestive qualities.

Biotechnology -- the genetic engineering of crops -- can accelerate the development of value-added varieties and the drive for quality.

We will also see changes in consumer demands that will accelerate the drive for quality.

These several demands for quality create important market opportunities.

Strong arguments can be made for increased crop diversity. We need a prudent number of new crops to fuel American agriculture and forestry. Some efforts are beginning with crops like kenaf, an annual hibiscus and a cousin to cotton, which is a source of fiber for making paper and paper board. In the South particularly, the crop appears to be competitive with standard commercial crops and is capable of producing greater quantities of fiber per hectare than pulp wood at about half the cost. kenaf can yield from 25 to 45 metric tons dry weight of stems/hectare/year. In the October 24 issue of the Austin American-Statesman, the front page featured kenaf with comment from a research director of a large farm complex that "A farmer that knows how to grow cotton knows how to grow kenaf".

Another attractive new crop candidate for American farmers is oil seed rape or canola, which is already widely grown in Canada and elsewhere.

There are other crop possibilities but, in each case, a market has to be created for the product. It is a "chicken and egg" problem that requires partnership between the public and private sector and innovative planning. I suspect that thought should be given to diverting some of the resources that are now used to support research on commodity crops to develop new farm products. It is difficult to encourage crop shifting unless there are a reasonable number of new crops to shift to.

I should also like to suggest that the ability to genetically engineer plants promises to enlarge the mission of agriculture in other ways. Today agriculture focuses principally on food and fiber. But if we can genetically engineer plants to produce animal proteins, other prospects emerge. What if we were able to genetically engineer plants to produce human insulin or human blood factors for hemophilia or a vaccine for hepatitis or other diseases. This now appears to be possible. Perhaps some of the high-value-added crops of the 1990's will be plants that produce drugs for human diseases or other animal proteins. Perhaps we will be harvesting human insulin and other human drugs from the "north forty".

Biotechnology and Animal Agriculture

Let me make a brief comment here on the use of biotechnology to increase the productive efficiency of livestock production.

It has been known for years that bovine somatotropin, a natural protein produced by the cow's pituitary gland, stimulates milk production, but the traditional source for the substance, pituitaries from cow carcasses, was not a practical means of providing a commercial product.

Genetic engineering, however, has enabled us to transfer the cow gene for the protein into a bacterium which can produce bovine somatotropin in large enough quantities for testing and commercialization. Extensive tests on dairy cows have already shown that BST improves the productive efficiency and reduces the input costs of the dairy farmer. A dairy farmer with, say, 80 cows can produce as much milk as he previously could with 100 cows, use 15 percent less feed to produce that milk, and finally have a chance to be more profitable! Monsanto is continuing research on this product and intends to develop it and gain approval for a commercial product for the dairy farmer by 1989-1990.

A similar somatotropin could boost feed efficiencies in commercial hog operations by up to 20 percent while speeding the

the rate of weight gains and producing leaner animals. Pork chops of the future will be high in protein and very low in fat. I think nutritionists and consumers the world over will applaud and would pay a premium for that kind of improvement in meat quality.

Importance to Agriculture of Genetic Engineering Innovations

The commodity crop surpluses that exist today have prompted some critics to suggest a moratorium on agricultural research and technology development, particularly biotechnology. "Why invent something that will increase productivity" they ask, "when we have more than we can sell or produce today?"

The answer is straightforward. If we do not continue to innovate, we will be forced out of business. We are not alone on this planet in producing commodity and other agricultural products. The capacity of American agriculture to retain its domestic markets and to expand its foreign markets depends on continued declines in the real costs of production and the development of differentiated quality-added and value-added products. American agriculture has achieved its preeminence in the world by innovating, by substituting knowledge for resources. This innovation must continue despite the problems that our agricultural economy faces today.

I believe that genetic engineering is the most important advance in agricultural science of this century and can enhance both the productive efficiency of agriculture and the quality of our environment. It has the potential to vastly increase the economic competitiveness of American agriculture. Yet, as you all know, there is an effort afoot to stop the application of genetic engineering to agriculture, and then to stop its application to other fields such as medicine. The public has been encouraged to be apprehensive about genetic engineering and biotechnology, and to adopt the view that genetic engineering is dangerous, unnatural and in some way infringes on "divine copyright". This concern promises to delay the application of biotechnology to agriculture in the United States, and has impeded the pursuit of this science in universities. Indeed, as of this day, the release of a genetically-engineered plant which is allowed to flower and go to seed has not occurred.

There is no reason to assume, guess or hypothesize that changing a single gene in a plant by genetic engineering and planting its seed in a field, would cause an environmental problem. It is absurd to pretend that we are living in a pristine forest, and to say that we shouldn't change anything. In the end, using biotechnology to control plant pests and to raise the agricultural productivity of areas we have decided to cultivate may be the best way to leave other parts of the world unaltered.

Let me remind you that honeybees, farmers and animal breeders have been recombining the genes of various organisms for millennia, and these organisms freely roam the planet. Thus genetic recombination is a key process in nature as well as in genetic engineering. Moreover, genetic engineering gives us an intimate view of how nature operates and allows us to work with nature. It has taught us to address nature in her own universal language, the genetic code, and nature has responded by producing proteins we have asked her to produce, like enzymes that dissolve blood clots or proteins that enable plants to resist insects and diseases, or proteins that improve the production efficiency of livestock operations. Genetic engineering is a marvelous Rosetta stone. Nature is finally scrutable and, at long last, human beings can work in harmony with nature. During the next decade humanity's knowledge of genetic engineering will increase far more rapidly than in the past, and we shall learn how to apply it more and more to unsolved but urgent problems. But we shall not be allowed to apply genetic engineering to agriculture without public support and without the support and interest of the nation's leaders. We need rational, science-based regulations which allow commercial development while meeting the goals of environmental protection and which permit the safe, purposeful release of modified genetic material.

I believe that the USDA should participate more actively in demystifying genetic engineering so that the public will accept this science as a natural, gentle science whose goal is to prevent pestilence and disease, to improve the productive efficiency and economic viability of American agriculture, and to enhance the quality of human lives. Unless you and your colleagues do that, along with our academic leaders and scientists, government regulators, Congress and the courts will slow down the development and application of genetic engineering to agriculture in this country and ensure that we lose a larger and larger share of both domestic and international markets for American agricultural products.

I am confident that the USDA, through its educational activities, can hasten the building of consensus upon which our democratic society depends, and I urge it and you to do so.

If we do not adopt new technologies like biotechnology which can significantly increase the efficiency of production and ensure product quality, it could cause a permanent crippling of U. S. agriculture. The day we limit the use of new technologies is the day we start to bring in massive quantities of Argentine wheat, Brazilian soybeans, and become a nation that imports larger and larger quantities of food.

It is also important to recognize that these new technologies will hasten the restructuring of U.S. agriculture whether or not they are adopted by U.S. farmers. For the technologies

will certainly be adopted in other agricultural countries and this will increase their productive efficiency, reduce their cost of goods, and make off-shore commodity products more attractive to users in the United States than high-priced local products.

A country or an industry can survive for a relatively short period of time by erecting barriers to competition and by not investing in innovation. But eventually that industry will have to adopt new technology to survive -- examples are the steel and auto industries which may have waited too long to adopt new technology.

If the application of biotechnology to agriculture is delayed for years before it is applied in the United States, the United States could wind up producing superb prototype technology for the rest of the world to apply.

For both the individual farmer and for the nation as a whole, the choice is clear: either be an innovative farmer or compete with one. Biotechnology can provide American agriculture with that innovative edge. Let's use it.



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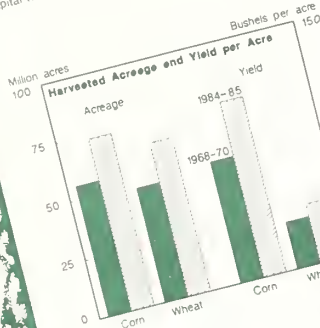
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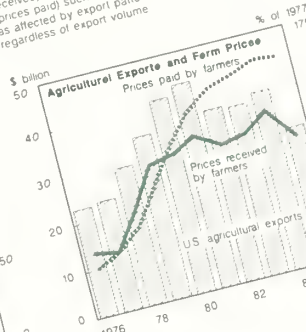
A Look at Farm Trade

American agriculture increased its dependence on foreign markets dramatically during the 1970's. The result was a sixfold increase in U.S. farm exports, from \$7.3 billion in 1970 to \$43.3 billion in 1981. The situation changed rapidly, however, after 1981.

(A) U.S. farmers committed more land and yield-increasing capital to meeting overseas demand during the 1970's.



(B) Export expansion bid up the price of farm output (prices received) during the 1970's. In contrast, input costs (prices paid) such as farm wages and pesticides are not as affected by export patterns and have continued to rise regardless of export volume.

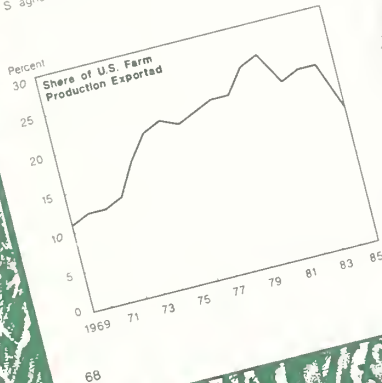


(D) All States did not share equally in export growth of the 1970's or the decline of the 1980's. Illinois and Iowa are perennially the largest farm export States, but California took the lead in 1985.

Fiscal 1985 Export Sales



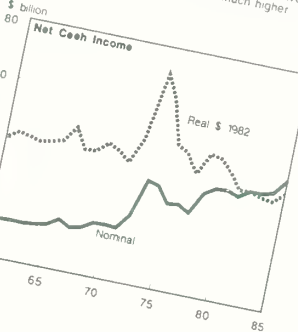
(C) The percentage of domestic production exported doubled from 1970 to 1981, peaking in 1981, with 26 percent of U.S. agricultural production exported.



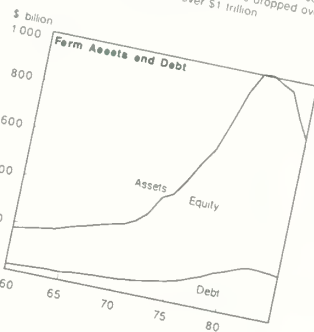
A Look at Farm Income

Farming is still basically profitable. But the huge debts incurred—as a result of vigorous investment in the late 1970's undercut by declining land values in the 1980's—have overwhelmed the debt-carrying capacity of earnings on some farms.

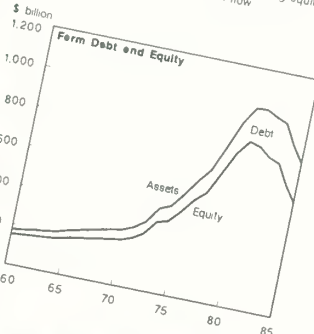
(A) Net cash income was about \$45 billion in 1985, and will likely stay near that record in 1986. Since there are about 1.5 million fewer farms today than in the 1960's, average real net cash income per farm is now much higher.



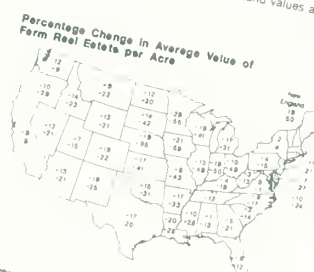
(B) After rising steadily, the equity of farmers and nonoperator landlords has fallen since 1981. Farmers have reduced debts slightly, but their asset values have dropped over 20 percent from a 1981 peak of over \$1 trillion.



(C) Many farmers who borrowed heavily in the late 1970's were not able to cover debt payments from farm earnings alone. They counted on borrowing against rising equity values—mostly in land—to meet cash flow.



(D) Thus, for farmers unable to cover debt payments from farm earnings alone, all that was needed to bring on a crisis was for farmland inflation to slow. Land values actually declined after 1981.



Top number is change from April 1, 1985 to February 1, 1986.
Bottom number is change from February 1, 1981 to February 1, 1986.

